

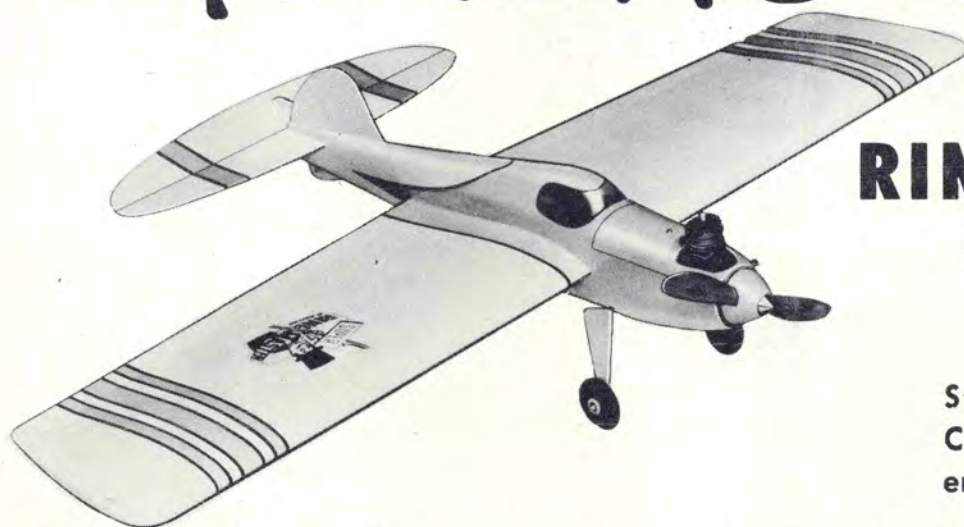
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HOBBIES
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SEPTEMBER 1955
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This month's cover concerns itself with radio controlled model planes and "enthusiasts." According to the artist, Harold Stevenson, it puts across a point that the most expert do not necessarily always have the most fun. We disagree. Of course those "hams" enjoy pulling their equipment apart; all the 27 1/4mc lads do is just fly. (Yes, they have a CRSL!)

air trails

SEPT. 1955 • VOL. 44, No. 6

HOBBIES

for YOUNG MEN

EDITOR ALBERT L. LEWIS

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Art Director Aubrey Kochman

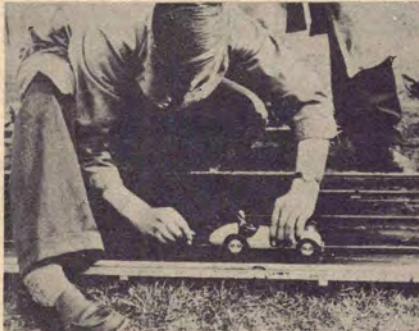
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Give the British a big hand for competition rail racing on semi-portable tracks. A fine report on a revived sport. Page 20.



Why not operate your radio control boat, plane or car model with a one-unit device containing xmtr, batteries, tools? Page 25.



is it an autogiro with overtones of a helicopter? We call Clough's creation the "Tan-Giro" — "tan" for tandem. Page 36.

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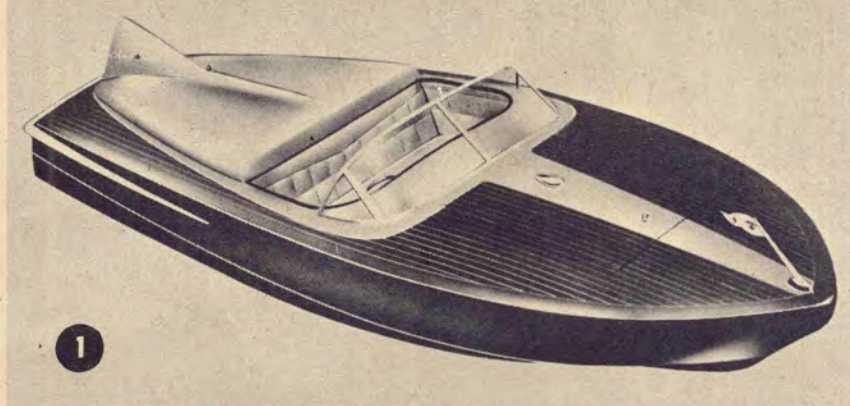
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Model Boating



It was bound to happen — the boat fans watched some U-Control . . . so now it's "combat-on-water"

Model Boat Show in Review. Here are some new boat models you can check over at your hobby shop: 1) Berkeley's Chris-Craft "Cobra" kit for .09 to .35 engines; 1½" to the foot scale; 31½" long. 2) Lindberg's Fleet Submarine kit; 15½" long; all parts molded in grey plastic. 3) K&B-Allyn's scale model plastic boat 18" long, 8" beam; designed for use with the Sea Fury Outboard or Inboard engines; either version available in finished or kit form. 4) Veco 35" Tugboat by Henry Engineering. 5) Olympia scale model Cabin Cruiser kit by Craft Models, Inc.; 18" long, 7" beam; 6) Arkansas Traveler scale model boat, 17" long, of light-gauge aluminum; produced by maker of real 12' boat, Southwest Mfg. Co.

Did you ever launch a sailing craft into what seemed like quite a fair breeze at the water's edge, only to have her sail out to the middle of the lake (or toward open sea!), the wind die out and the darn thing float there motionless with the sails flapping idly? Well, so apparently has Lawrence Sano (15 Lufkin St., Lynn, Mass.) and he has rigged up a neat system to foil such conditions. The sketch shows how he copes with a dying

wind; a small electric motor is installed in the hull, with a few batteries to run it, and the necessary prop shaft and propeller. These drive components can be small ones—we aren't trying to make a speedboat out of the yacht.

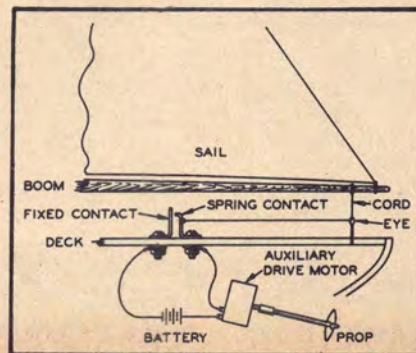
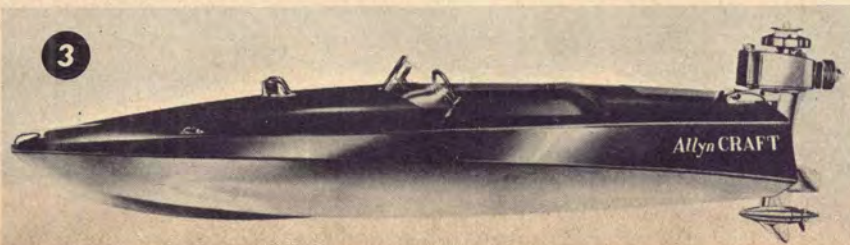
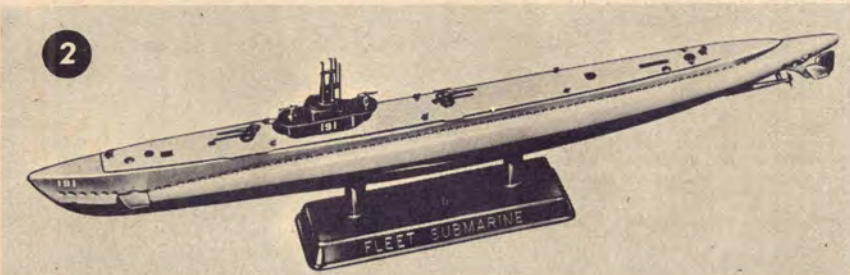
Heart of the installation is a simple pair of contacts which are controlled by the boom. When there is a reasonable amount of wind, the boom is pulled to one side or the other, and in turn it pulls the cord attached to the thin springy contact. Thus with a usable amount of breeze, the auxiliary powerplant is kept out of action, but if the wind dies, the drive system comes into play. You'll have to figure out the rudder settings for your own conditions; it *could* happen that the drive motor would simply propel the boat in circles—but even that might seem better than to just have your ship sit motionless on the water. Lawrence says this system has worked fine on a Gypsy Sloop built from a Comet kit.

"Combat" Boating! A model-minded newspaper (at least when Bob Keeton puts on the pressure) is the Richmond (Va.) *Times-Dispatch*, if we are to judge from a full page spread on R/C model



boating. Bob (who is a commercial artist on the paper and resides at 3416 Stuart Ave., Richmond 21, Va.) had persuaded his Editor to run some model boating news and pictures before, but the full page tear sheet he sent us was really tops—headed "Shore-to-Ship Radio Control" and featuring a full-page width shot of Joe Thurston's Chris-Craft Motor Yacht heading out from shore under full power. Some of Bob's shots are reproduced this issue in Hobby Model World section. There are some 30 Richmond modelers who got into R/C via planes, but have branched out to the boating field too. When the lake froze over they simply went out with their planes! First boatman in the group seems to have been Floyd Sims, co-owner of a local hobby shop, but he was soon joined in the spring of 1954 by other marine enthusiasts. At last reports, there was no formal sort of organization, just the usual Sunday morning gatherings at the lake-side. We don't know for sure which is their best boating spot, but the paper mentions Swan Lake in Byrd Park, and also Shields Lake.

Bob's favorite boat seems to be ATH's Sea Scooter. He says he had a bit of (Continued on page 11)



NOW! FULLY CONTROL YOUR R/C BOAT!

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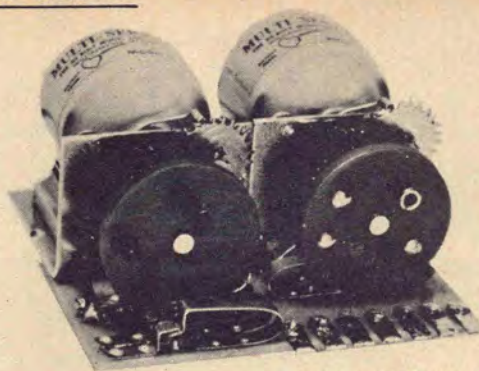
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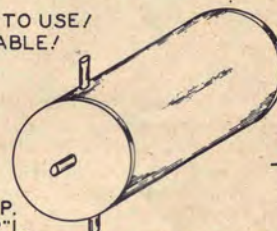
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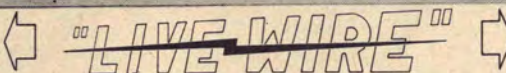
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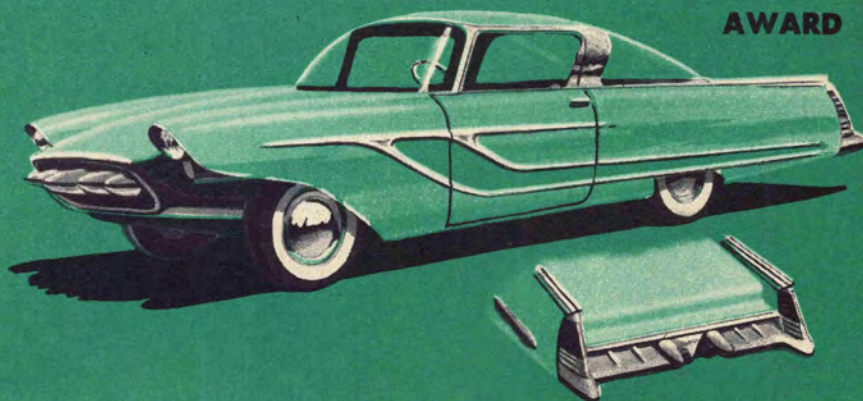
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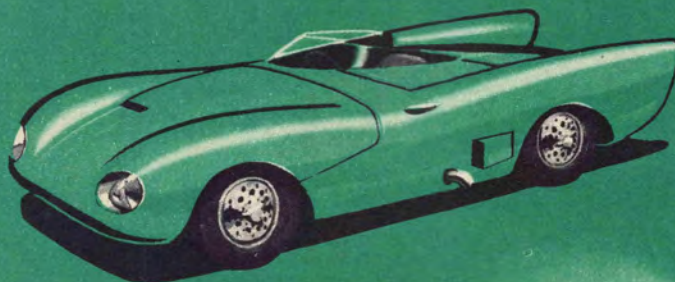
SECOND
\$25
AWARD



The Turtle, combination tank and troop carrier by Howard C. Tomashek, Winoona, Minn. Can accommodate 55 fully equipped troops or 25 litter cases. Armament: two 90-mm cannon in top turret which can also mount flame throwers; and three rapid-firing 20-mm cannon, or cal. .50 machine guns in lower nose. Bulge in front contains driver and radar. Has periscopes.



Competition sportscar by Jonathan Thompson, Claremont, Calif. This type is popular in Europe for competition at major events like 24-hour LeMans endurance race. Carefully designed aerodynamic body permits 100 mph-plus cruising speed, even with comparatively small engine. Fin-like rear fenders add to stability at high speed. Dual overhead camshaft engine set at 45° angle, developing 255 hp. Wheelbase is 90 in. Weight 1750 lbs. 190 mph.



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Model Boating

(Continued from page 6)

trouble after he fitted it with a Cub .099 engine; before he got the rudder set right he tipped her over a couple of times. However, he had built several sealed flotation chambers in the hull, reports she floated fine bottomsides-up, until he could drag her out for drying. He mentions using the craft successfully in "naval engagements," and doubts the Scooter designer (it is the work of ATH's Art Director, Aubrey Kochman) ever "dreamed his beautiful brainchild would be put to such base purposes!"

From far-off Hong Kong comes a letter by Cary Kwok (101 Robinson Rd.) with the news that he is a regular reader of ATH, and offers a hint for water-cooling the usual air-cooled engines. He suggests filing away alternate fins on the cylinder barrel; this leaves room to insert copper tube rings. Ring ends would have to be fitted closely, well tinned, then soldered after being slipped into the spaces between the remaining fins. Vertical tubes would then be soldered to connect the rings to each other.

We are informed that contact man for the Chicago Model Power Boat Association is Roger Mathews, Vice-Commodore (10451 Parnell, Chicago, Ill.). IMPBA Delegate is Tom Perzentka. Two new clubs which have recently affiliated with the IMPBA are Muncie Miniature Power Boat Assoc., Robert Schrader, Commodore (321 Beechwood Ave., Muncie, Ind.) and the Corona Model Boat Club (see below).

One of our most reliable informants in the model boat field seems to be Carl Dunlavy, impressario of Carl's Hobby Shop (610 E. Grand Blvd., Corona, Calif.). Brother Dunlavy, who is Sec. of the Corona Model Boat Club (also of the Corona Circlers Gas Model Club and the Corona Miniature Racing Assoc.—what a busy penman this fellow must be!), has sent us some most interesting data on an R/C boat contest his group conducted this spring (see August ATH). His boat put on an R/C show at the Corona Naval Hospital which borders a beautiful lake. Quite a few stunts were worked out, and in order to make it a real big affair, a group of R/C modelers from the SCMPBYA in Los Angeles was invited to participate; upshot was that there were 33 boats ready and eager to run at the Hospital, representing all types of power—steam, gas, electric and sail.

So that everyone would have a chance, the idea of L.A. boatman C. W. Hering to time cruises by a 3-minute hour glass was adopted, and worked very well. As soon as a boat was placed in the water the hour glass was upended and when the sand ran out, end of time was announced on the PA system, the boat was brought in, and the next man stepped up. The "ready pits" could keep track of the sand too, so that the next man was always ready when his time to sail came. Such a limitation on runs had to be made, since the show had to be run off in 3½ hours, and the Corona gang wanted to make sure that everyone had his chance.

Wonderful cooperation by the Navy made the show an outstanding success, with both the Commanding Officer of the Hospital and his Executive Officer on hand. The former took part in one stunt, which also included a Red Cross girl and R. L. Townsend (from Babcock
(Continued on page 55)



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Man, Marconi would be a real surprised seer if he could see how those air waves are hopping!

■ How do you like that magnificent radio-controlled boat pictured above? Real smoke pours out of the stack when she's under way. Want to know more about it? Well, we ain't talkin'—not this issue. But all the fancy facts and figures coming up subsequently... so keep your eyes on ATH!

Two Clever Ideas. If one of your friends has a multi-tone transmitter, Fig. 1 shows a neat way to operate two models from it. You'll need one that has at least four tones, plus two receivers, each of which will respond to two of the transmitter tones. Hooked up as shown, either switch will control two tones at will, but if either of the switches is off center, throwing the other off-center will open the transmitter circuits, and no tones will go out. Thus there is no possibility of sending out multiple tones or a tone that is not right for either receiver. This

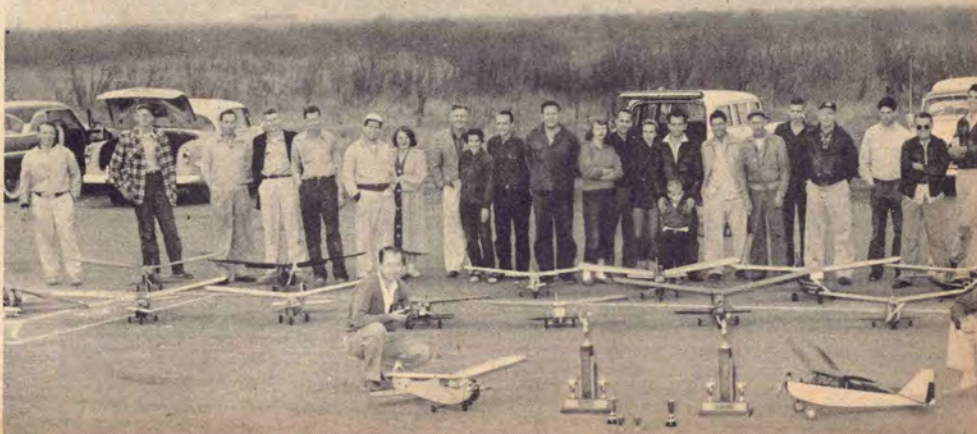
could be used for planes, but we would prefer to see boats controlled with such a system! Bill Saks (6811 Fairfax Rd., Bethesda 14, Md.) figured out the switching; CRL non-shorting lever switches would work nicely in this setup.

A very simple and universal Field Strength Meter is shown in Fig. 2, suggested by Karl Ehrlick (2403 6th Ave., Greeley, Colo.). It can be used on any band, since there is no tuned circuit, and you just hold the unit fairly close to the transmitter antenna. Karl finds he can get about half-scale reading, with the unit held 5" from the antenna of a 3 watt transmitter. The longer the antenna you use on the FSM, the farther you can get from the transmitter antenna, of course. Any diodes may be used; Karl suggests 1N64's, since they are used in many TV receivers and are plentiful and cheap.

Clubs and Contests. We had notes in

L.A. Radio Controllers (LARKS) and monthly winners: (Lt.) Byron Mier, original, Fox

.35, 465 (single); Howard Bonner, Trixter Beam, Fox .19, 27 1/4 (multi).



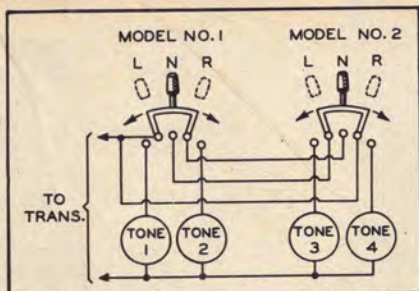


Fig. 1: Operate two models from 1 xmtr!

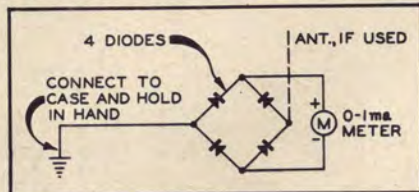


Fig. 2: Simple Field Strength Meter.

this column a few months back on the Pittsburgh Flying Circuits, and gave the address of Maynard Hill as contact man. Trouble was, by the time the news was printed Maynard had moved; and as luck would have it, quite a few R/Cers saw our item and tried to reach him at the wrong address. To set things straight, he now resides at 309 Princeton Dr., Pittsburgh 35, Pa., and phone is VA 3-3668.

Rapidly expanding R/C club in the Garden State is the N.J.R.C.C.—standing for North Jersey R/C Club. Group has some 60 members, is being heard from at contests in the Northeastern area; you'll see the emblem—an "eagle" with a vacuum tube body, on a yellow background, with above initials in black—at most meets. And you'll often see this same insignia on the winning plane! These are officers: Pres.—Les Dodson; VP—Dick Padgett; Sec.—Paul O'Neil; Treas.—Moneybags Bosland. Meetings are every third Friday evening in Ridgewood, and "skull sessions" are often held between times. Club is affiliated with AMA, has AMA Liability Insurance for protection of members and others. Members come from a wide area of northeastern N. J., fly at a field in Preakness, N. J. Group is almost 100% proportional control (a holdout is new member Gene Foxworthy who hasn't been "converted" yet!), favor Mac II transmitters and twin gas-tube receivers. Planes are of great variety, with LW Trainer the most prevalent in the kit category. Interested

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MODEL A QUAD H. Q. Parts Kit\$12.95; Wired & ready for use 16.95
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CONVERSION KIT, easily converts all old type LORENZ receivers to the **NEW ESSCO E.J.L. CASCADE QUAD CIRCUIT**, complete kit includes full instructions..... 3.45
CONTROL POTENTIOMETER required extra, Subminiature type.....\$1.00; Miniature size..... .60

THE ESSCO RCX 5 watt MAC II—The most popular hipowered XMTR. Preferred by most modelers. Housed in ideal size low slung non tip over cabinet. Complete set ready for use. With multi-position D'Arsonval type meter.....\$29.95; KIT\$24.95
 Complete with 2 volt cell, power supply & charger 39.95
SUPER MODEL, operates from your 6 or 12 volt auto battery or self contained rechargeable battery, super value at 44.95



Going broke replacing the expensive B batteries in your XMTR? Replace them with the **ESSCO MINI PAC**. Uses all new 1955 mfrd components. Operates from 2 or 6 volt battery. Output 135 or 180 volts at full 45 ma. This unit uses tapped transformer for economical battery drain, dropping resistors in output are wasteful of battery current.
 Complete supply ready for use 12.95
 Pre-assembled kit, requires 20 min. to complete 9.95



SPECIAL—THE NEW WEB GAZISTOR RECEIVER. Featured in JULY Air Trails. **THE ESSCO H. Q. PARTS KIT** includes all specified components of the very highest quality, tube transistor drilled base, wound coils and relay if desired. ESSCO's price is lowest because ESSCO'S quality is tops—Complete parts pkg \$ 4.45
 With tube & transistor 10.95
 With relay 16.95

THE NEW MAC III AES RECEIVER, featured in JUNE Air Trails. A lightweight low battery drain multi-tube receiver for the smallest models. Complete ESSCO H. Q. parts kit 16.95
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 McEntee FSM Adaptor parts kit, only 4.95

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See Add'l. GYRO SPECIALS on Opposite Page

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NEW! SUB MINI Phone Jack—Open Circuit	.35
NEW! As Above. Closed Circuit Jack	.40
NEW! SUB-MINI Phone Plug for above Jacks	.55
NEW! ADVANCE RELAYS \$8.00; Price Relays	5.25
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1.3 V.-3 A/Hr. 4 x 2 x 3/4 in.	7.95
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SPECIAL TRANSMITTER, RECEIVER & ESCAPEMENT Including Tubes & Relay

A Powerful 4.8 Watt Transmitter & Supersensitive Receiver for 27 1/4 Mc. Radio Control. NO KNOWLEDGE OF RADIO NEEDED TO GET WORKING. FREE with above kits BERKELEY ESCAPEMENT (Not a Kit). **\$9.88**

COMBINATION R/C TEST METER. Checks Field Strength; 27 1/4 Mc. resistance; Volts 0-10, 50, 250, Millamps 0-5, 50 (1 Ma. Movement). Molded Case 3x4 1/2	\$14.95
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GYRO 6 REED RELAY—permits 6 controls with circuit diagram	\$14.95
GYRO 6 TONE MODULATOR—converts any transmitter for 6 separate controls, complete kit	8.45
GYRO 3 TONE MODULATOR KIT, works with any transmitter. Suitable for tuned relay or Safford Receiver (wired & tested: \$11.85)	5.85

RADIO CONTROL RECEIVER KITS 27 1/4 Mc

NOTE: All GYRO kits are guaranteed complete deluxe types with diagrams—pointing else to buy!	
LORENZ 2 TUBE with 2 pots. and wound choke	3.35
Complete with long life RK-61 & XFG-1	9.75
Above with tubes & Sigma 4F Relay	13.95
MINI-MAC w. Spec. Quench Coil, Wound Choke	4.25
Complete with CK526 Tube and ED RELAY	11.45
MILLER or SIMPLE SINGLE with OSR type QUENCH COIL & Wound Choke	4.45
Complete with Tube & SIGMA 4F Relay	9.95
JOHNSON 3 Tube, with SUB-DUNCER CHOKE	4.75
Complete with 3 Tubes & SIGMA 4F 3000 Relay	13.95
ABOVE KITS with drilled base & wound coils, add	.50
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TRANSMITTER & RECEIVER KIT—Parts and diagrams (less tubes & crystal) to build famous MAC II Transmitter Unit and LORENZ RECEIVER, with 10,000 ohm relay w. drilled bases & wound coils	9.95
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AUDIO TONE MODULATOR—Plugs into Transm., gives Audio-tone signal, tested, with battery	7.95
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STORAGE BATTERIES	
BB54-A, 2 Volt, 3"x4"x5 1/2"—27 Amp. Hours	2.75
NTS, Mini, 6 Volt, 2 1/2"x3 1/2"x3 1/2"	2.45
2-5 Volt BATTERY CHARGER, wired & tested	6.95
BATTERY CHARGER KIT, 2-6 Volts	4.95
CHARGER FOR DRY BTRIES. Use 1 set of A & B's all season!	8.50
Recharges all 1 1/2 to 90 Volts	1.00
VIBRATORS, 6 Volt \$1.35; 2 Volt Synchronous	.20
METER JACK, open circuit \$0.30; 4F Choke	.35
Closed circuit 35; PLUG for Jacks	.15
MINI PLUG & JACK, for metering, etc.	.25
New Submini, CLOSED CIRCUIT JACK & PLUG	.75
Bakelite BOARDS for Receivers: Drilled for Lorenz, Single, Miller or M.Mac 50c; Drilled for T.R. Rec.	.15
SWITCHES, Toggle SPST. 30p. Slide switch	.55
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POTENTIOMETER, mini 10,000 or 25,000	.50
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POT., dime size, 10,000-25,000 ohms	.90
Dime size 100,000 ohm	.10
CONDENSERS and RESISTORS, most sizes	.45
CERAMIC TRIMMERS, 3-50 mmf. or 7-45 mmf.	.60
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VARIABLE CONDENSER, air type, screwdriver shaft, 100, 125 mmf. .80; 15, 25, or 50 mmf.	.25
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Wound for Lorenz, S. Single, Johnson, Mini Mac	

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XTAL diode	.45	XFG-1	\$3.20	3A5	\$1.25
1S4	.90	1V5	1.80	3B4	1.85
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EVERYTHING UNDER CONTROL?

parties may reach Sec. O'Neil at 269 Mulberry Pl., Ridgewood (GI 4-3467), and club membership is open to anyone with an active interest in R/C.

R/Cers in Waukesha, Wis. area have no flying field problem; they have over 2000 acres available to them, and have formed a group called Lakeland R/Cers (also LARCS—don't confuse them with the Los Angeles group that uses the same initials). Bill Deffner (The Hobby Horse, 839 Gaspar St., Waukesha) is Publicity Man, says they refer to themselves as a group—not a club—since they have no officers, by-laws, red tape, etc. They just fly! They do have regular technical meetings, though, and Sunday is the big flying day, when families are usually included in a picnic. A variety of planes are flown, including amphibians and float jobs, also a 7 ft. pusher, and there are quite a few R/C boats. Regular meetings are held once a month; contact Bill for further info.

Georgia's Tri-County R/C Club meets at Smyrna Cambell High School; according to Forrest Cole (740 Kennesaw Way, Smyrna, Ga.) the group is made up of parts of several defunct clubs. L. R. Purdy is Pres., and they have attracted quite a few brand new members.

Mirror Flying Fair is the biggest thing in this line held on the East Coast each year at Floyd Bennett Field in Brooklyn, N. Y. R/C event is always big—this year about 115 modelers actually signed up at the registration desk to fly! Event was run very smoothly in general, and most everyone had chance to try his luck; R/C was flown under AMA rules for the first time this year, with a few slight changes to make things work for the expected large turnout. One innovation was 2-minute time limit to get plane into air after contestant started to flip his prop; actual flight time limit was 5



Yardney silver-zinc storage batteries for guided missiles; 100 amp-hrs nominal capacity, peak pulse discharge of 2,000 amps; can take 1,000 G's!

minutes, but any time saved by getting in air before 2-minute limit was up was added to the 5 minutes. This plan worked very well—rewarded those who had their engines and equipment under full control.

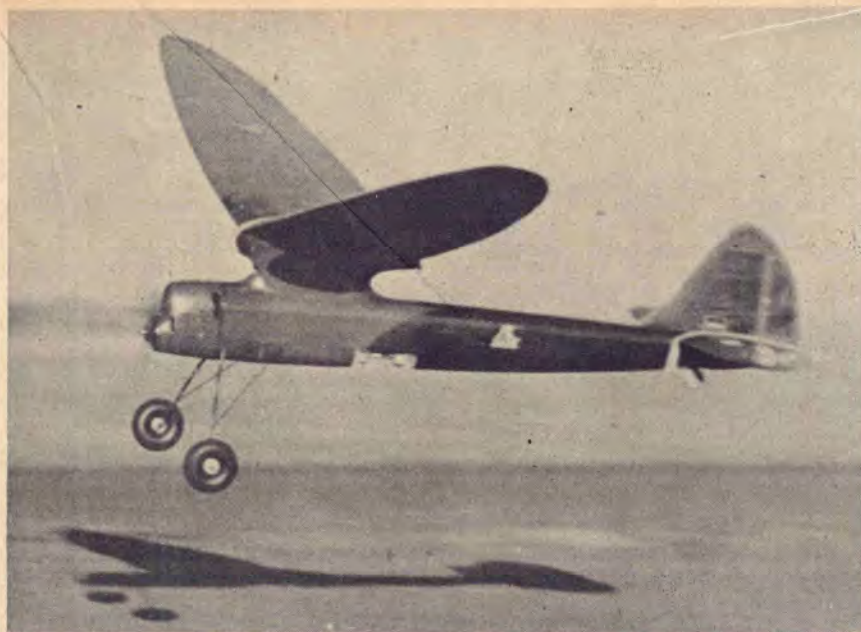
Weather—which has almost always given the Mirror people a hard time—was quite good. We say "quite" because of an odd situation that prevailed most of the morning; day was sunny and hot, and there was practically dead calm on the ground. But about 200 ft. up there was a "jet stream" coming from the east. Flyers who wanted to get up high for the stunts had a real fight on their hands—some really fast ships were slowly blown backwards! For this and other reasons, flying was not of too high a grade; the multi boys, especially, were rather ashamed of their showing.

Winners came out as follows: Multi-control: 1—Fran McElwee, 66 points; 2—Carl Schmaedig, 52 pts.; 3—Bob Petersen, 44; 4—Danny Mass, 42; Rudder: 1—Vince Bonnema, 59; 2—Dick Allen, 57; 3—K. Brenegan, 56; 4—J. Nusslein, 54. It will be seen that only McElwee topped the Rudder winner in points, and that four rudder-only men were higher



California's John Curry (lt.) with G-84 glider (using non-poly Hogan wing) which R/C soared for 2 hrs., 58 min. Single channel Babcock rcvr, C-S transmitter, deBolt Multi Servos. Below: deBolt's 56" Live Wire "Champion."





From New South Wales comes pix of Gil Miles' converted 9' free flight. Forster .99; 16" prop at 5,000 rpm. Miles has been

in R/C planes for 30 years; heads up controlled model plane activities in government's meteorological research.

than the next multi flyer! Of the large entry list, only 3 flew on 465 mc., and there were about 10 on 50 mc. Some hams had their equipment on the amateur 28 mc. band, but had to fly with the 27 1/4 boys because of bad interference. Each entrant could take two flights, and most had their quota, save a few late-comers who got in only one.

Fragmentary reports of R/C event held at Westchester County, (New York) Airport show that Multi-control R/C event was won by Vince Bonnema, hot contest flyer of NJRCC (see above); Vince was flying his proportional rudder-only plane in this class! Another NJRCC man, Paul O'Neill, came in second in the Rudder-only category. Vince, whose "Rollo" was described in the June '55 issue of ATH, has a new job along somewhat similar lines this year, but a bit smaller and faster. Called "Rollette," it is powered by a Torp .15. Rollo cleaned up for its owner at Metropolitan meets during 1954 season, amassing some half-dozen firsts, and it looks as though Rollette is following along the same path.

Regular News Sheet is put out by the K/C R/C Assoc.—issue No. 8 showing that Dan Walters is Pres., Bud Atkinson, V.P., Ralph Stoltz, Sec. and Len Marshall handles the dough. The News Sheet is edited by Art Fitzgerald. Group has an active season planned, several contests having been run off already. Con-

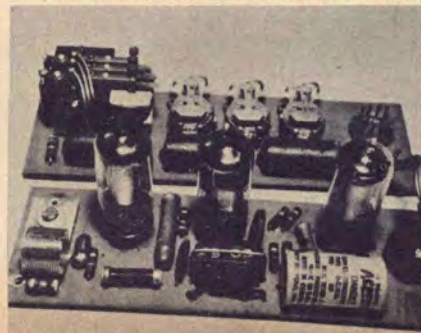
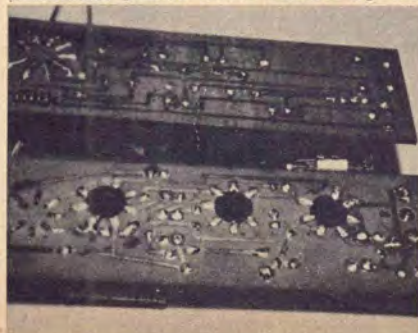
tact Pete Peterson (5725 Prospect St., Kansas City 30, Mo.) for more data.

For an example of homemade printed circuit work see the two pix at bottom of page; these show a reed receiver made by Ward Brennan (127 Helene, Royal Oak, Mich.). Built in two sections, right-hand view shows the receiver unit in foreground, with the reed and relay department behind. At left is underside of both units, in the same positions. The outfit is pretty much the same as a Rockwood receiver, but was printed in two sections for ease of mounting, and to make it possible to use the receiver with a single relay if desired. Linen-base phenolite was used; the receiver circuit was applied with a drafting pen; a Leroy lettering outfit was used on the reed unit. Reeds are E.D., with Neomatic 7250 ohm relays. Receiver weighs 3 oz. and the reed-relay unit 4 3/4 oz. When the photos were taken, the set hadn't been flown, but worked well in bench tests. Ward is a member of the R/C Club of Detroit.

An ambitious project is planned by Bill Young (2140 Oxford St., Berkeley 4, Calif.). He hopes to build a scale R/C model of McDonnell XP-67, but is having trouble getting good 3-views of it. Can anyone help? Bill is a ham (W6MJH), expects to put his equipment on the amateur 420 mc. band.

(Continued on page 63)

Homemade printed circuit receiver by Ward Brennan of Royal Oak, Mich. Data in text.



SEE MORE **GYRO** SPECIALS ON OPPOSITE PAGE

AT LAST! Supersensitive TRANSISTORIZED Lorenz Receiver.

Follows fast pulsing (no delaying diodes used). Lowest Battery Drain of any Receiver on the market. Only 50 Ma. "A" and less than .4 Ma "B". Relay current rises up to 3 Ma. with signal, up to 7,000 hrs. Transistor life & very long tube & battery life. Completely wired & tested with relays. only

SIGMA 4F (8000) Relay, \$4.25; 3 for	11.95
LORENZ RECEIVER KIT; Complete with IAG4 2d Stage & RK-61 8.25; with Sigma 4F Relay	12.85
McENTEE'S "RADIO CONTROL HANDBOOK"	2.25
R/C BOOKS: Berkeley \$1, Safford \$1, Appl. of R/C	.50
METERS: Accurate 2" sq. 0-1 Ma	3.55
0-5 Ma. \$2.25; 0-3 Ma. \$2.95; 0-50 Ma.	2.75
Gyro DIRECTOR TRANSMITTER KIT, with cabinet, crystal, tube, antenna, keying switch	12.45
NEW! LORENZ deluxe TRANSMITTER KIT (AUG. M.A.N.) with tubes, crystal, drilled chassis, wound coils, case, antenna & instructions	16.95
CRYSTALS, 27.255 Mc Peterson Z9A 3.95; holder	.15
FIELD STRENGTH METER KIT, crystal, wound coil, \$1.35; with 0-3 Ma. Meter \$3.75; Wired & tested	1.00

POWERFUL GYRO TRANSMITTER

IMMEDIATE DELIVERY. The Most POWERFUL (5 Watt) TRANSMITTER at the LOWEST PRICE. Famous 2 Tube MAC II circuit, featuring GYRO MAGIC TUNING INDICATOR. Completely wired & tested, includes 9 1/2 ft. sectional Antenna, remote "clicker" Keying Switch, Motor, Ground Plane Booster. Beautiful Cabinet: 12" x 7" x 6". Available in the following models—all with money-back GUARANTEE.

GYRO X1 TRANSMITTER, as described, with built-in 2 volt Storage Battery, 2 Volt Vibrator Supply, Battery Charger. Nothing else to buy. Complete \$39.50
GYRO X2 TRANSMITTER, as described, with built-in dynamotor for operating from 6 Volt Auto battery. Complete (less battery) \$33.95; for 12 V oper. add 2.00

GYRO X3 TRANSMITTER, as described, but for dry battery operation, using 1 tube. Complete (less batteries) 23.95

NEW GYRO DELUXE TRANSMITTER
 Operates any 27 1/4 Mc REGULAR or AUDIOTONE (WAG, Babcock) Receiver. The only high powered Transmitter offering both Standard & Audiotone Modulation—your choice by a flick of the switch; Incorporates all features of the famous MAC II model X-1 with 5 W. power! only 48.50

MODEL X MAC II, 2-tube TRANSMITTER KIT, as used in Gyro transmitters. Only 3"x4"x1 1/2". Complete, install in your case with tubes & crystal 10.95

Above Wired & Tested
Brand New 2 V. VIBRATOR TRANSFORMER, used in PE157, Output 180-135 V @ 35 Ma. 3.50

STOP WASTING MONEY on dry batteries for your transmitter. Add our 2-VOLT VIBRATOR SUPPLY to any transmitter; output 135 to 180 V.; assembled \$10.95; Kit 6.95

BEEP BOX: Fits Palm. Rotary Type for any Self-Neutralizing Escapement. Not a Kit 1.95

Low Cost **PROPORTIONAL CONTROL** added to any Transmitter & Receiver. Works with any Actuator. COMPLETE KIT of parts & diagrams for TRANSMITTER PULSER, incl. case 6.95

Electronic PULSER KIT (WAG) with 2 tubes & Relay Wired & Tested \$11.95; Kit 7.45

ACTUATORS: Adams \$6.45 Southwestern 5.95

FLEAWIGHT HOOKUP WIRE—25 Ft. (5 Colors) .25

SIGMA 4F RELAY COILS; for replacement 10K 1.10

SOCKETS: mini. hearing aid; 4 or 5 pin .15

Mini. 7 pin 10c; Lokalt or octal 25c for 2

PLUS & SOCKET, 3 or 4 pins, pr. .15; 5 or 8 pin, pr. .25

LORD SHOCKMOUNT 15c; Mini 7 pin plug & socket .40

E.D. Polarized, \$7.50; **NEOMATIC** 5.95

RELAYS: 41FS, Sensitive 10,000 ohms—SPDT 1.45

NEW SIGMA 26F Relay 8.50; **FLEA CLIPS** 4 for 10c

DISO MAGNET for proportional control, 1/16" diam. .95

OSR type Quench coils \$1.65; for MINI-MAC 1.25

WHIP ANTENNA, 3 sect., 9 1/2 ft. 1.85; with base 2.75

ESCAPEMENTS CITIZENSHIP 5.95; **BONNER MINI** 6.95

R/C DIAGRAMS: 6 pop. XMTRS. & RCVRS .25

SUPER AEROTROL \$3.95; **ED MARK III** 5.50

BONNER COMPOUND, makes 1 channel duplicate 3 channel control \$14.95; **CAMERON COMPOUND**, \$9.95; **CAM. 2-Pos** 5.95

DMCO SERVOS 2PN, \$11.95; 3PN 14.95

Ectron JOY STICK CONTROLLER: Automatic Beep Box & Escapement. Controls Rudder, Elevator plus 3 more—Fits any Transmitter & Receiver. Both for 32.95

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41 Surplus Twist DRILLS \$2

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Hobbyists! Homeowners! Carpenters! Almost your last chance to get 41 brand-new, carbon tool-steel twist drills at this low price. Sell for up to \$6 in stores... You get about 5 each of all most used sizes from needle-sized 1/16" up to and including 1/4". Tempered cutting edges easily bite through steel, aluminum, iron, wood, or plastic. Each drill hardened and designed to give 1800 drillings. Limited supply. Rush \$2 for each set ordered and we pay postage. If C.O.D. you pay postage.

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Model Car News



Meeting will come to order, men! Anyone interested in cars is mighty welcome here

■ Photo above should bring back memories to lots of "indoor" model airplane flyers who through the years have flown light, rubber-powered endurance craft and hand-launched gliders in the giant dirigible hangar at the Lakehurst, N. J., Naval Air Station. Yessir, many a micro-film-covered stick and cabin job is still hung up in them there rafters!

Those fellows in the foreground are engaged in preparing 150-mph model race cars for running on the Lakehurst Cable Car Track. "Quite a departure from microfilm models!" observes Robert J. More who took the shot.

Talk about Beautiful Models! Just look at those beauties there. Top car is a 1929 Bugatti Type 35 in full road trim by Phil Jensen of Cohoes, N. Y. Body is constructed of balsa wood, wheels are turned from white pine and spoked with common pins. Headlamps are turned aluminum. Features include radiator stone-guard made from nickel radio-tube grid wire, real leather hood and spare-tire straps with working buckles fashioned from wire, aluminum instrument panel, cord-wrapped steering wheel and workable steering!

That 1/32nd-scale German Mercedes-Benz pre-War II Grand Prix racing car was built from an English kit by I.A. A.M. treasurer Joe Molloy of San Pedro, Calif. Note size in comparison to package of cigarettes.

Phil Jensen is also responsible for the 3/4" to the foot scale model of a Bentley Mark VI with sedan de ville body by Carrosserie Franay of Paris. A single picture of this appeared in "Autocar" magazine, covering the 1952 Paris Salon. Phil used this picture and basic chassis dimensions furnished by the Bentley Company to draw his own plans. The car is finished in black, with a light

blue trim panel on the side and two-tone grey leather upholstery. The wheels and tires, originally intended for the front of "Thimble-drome" racing cars, were purchased in a hobby shop. Body is made of balsa wood; the grill is sheet aluminum.

We have noted in this column that overseas model car racers can't understand how our American cars can attain such high speeds—it has been surmised that it may be due to superior American tracks. Recent letter from V. E. Smeed, Assistant Editor of our English counterpart, the "Model Maker" feels this is unlikely. He read above comments in our May column, says that while he has not seen any of our tracks, there are excellent ones in Great Britain, and several parts of Europe — particularly Italy and Switzerland.

Mr. Smeed says a leading Swedish modeler mentioned that his car had been making an average of 107 mph on his home track; he had a chance to pay a quick visit to the U.S.A., put his car in a box with a supply of the fuel he had been using. When he tried a run on an American track, with this fuel and the identical (unchanged) needle valve settings he had always used at home, the car roared right out to speeds around 125 mph! Mr. Smeed says the model plane speed flyers have the same experience, and mutter darkly about bad atmospheric conditions on the European side of the Atlantic.

And he further notes that when, during the war, Rolls-Royce drawings, tools and technicians were shipped over here, the engines we produced (Packard Merlins) were identical to those built in England, yet they sounded entirely different in the air—and furthermore, had the peculiar feature of being liable to cut



Now how about this Bugatti? A beauty!

without warning, until they had completed some 40 hours' running. Says he can vouch personally for this, as he flew Spitfires fitted with various types of Merlins, but he has never heard a satisfactory explanation.

Mr. Smeed ends up with the hope that his remarks have proved of interest; well, they have—but we are just as much in the dark as ever! Does anyone else have any comments on this subject? Wonder if the speedboat boys would be able to offer some ideas here—surely U.S. water is the same as European.

More news of the NMRCA — the National Mites Race Car Assoc.—comes in from Carl Foster, Jr. (815 W. Virginia Ave., Kokomo, Ind.). He has been hoping to see more news of the group in this column, so sent in some himself. He too feels that miniature car racing is staging a strong comeback, hopes it will keep up. The race at Kokomo ended with Fred Hamer (Chicago) top man in the "McCoy .19 class," with 81.97 mph. The .29 class was taken by George Fernelius (Detroit) with 99.78 mph. Further races of this Association will be held at Muncie, Ind. on Aug. 14 (National race) and the Chicago club will hold a Sanction race at Michigan City, Ind. on Sept. 25. Info on these races and other NMRCA matters may be had from Sec. Fred Hamer (4635 McDowell St., Chicago, Ill.). Carl says the Kokomo group plans to build a new track at the City Park this year.

He listed for us the 1954 top speeds in the various categories covered by the NMRCA, which follow: .099 class—Jack Stahl (Kokomo), 55.35 mph; .19 McCoy class—Jim Moore (Muncie), 92.02; .29 class—H. S. Briggs (Pontiac, Mich.), 108.70; .15 & .19 Cox class—Carl Foster Jr. (Kokomo), 66.51; .19 spur class—Glenn Wilson (Muncie), 78.94.

(Continued on page 58)

Mini-size Mercedes-Benz by Joe Molloy.



I say, where's the Bentley's chauffeur?



On the evening of June eighteenth, Gerald Hewitt Smith, President of Street & Smith Publications, Inc., publishers of Air Trails Hobbies For Young Men, died. The Very Reverend John B. Coburn, Dean of Trinity Cathedral in Newark, his classmate, conducted the funeral services at Princeton, New Jersey on June 21, 1955. The following excerpt from Dean Coburn's prayer eloquently expressed the feeling of all of us who knew him:

"Loyal to the traditions of his heritage, he carried responsibilities with integrity, wisdom and faithfulness. Impatient only with cant and hypocrisy, he was long-suffering and of great goodness to those with whom he labored. Their problems were his, their sufferings he made his own, and their care his only concern. A multitude were blessed with his friendship, counsel and encouragement along the way, because it was his life he shared with them, willing to spend and be spent.

"There was no guile in him . . . only a spirit of utter simplicity within, a humility of heart, a quiet humor that never failed him and always helped us."

JOB WITH THE FUTURE THAT ARRIVES IN A HURRY!



19, 1955

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Clerk-Record Yng man 21-24, industrious, reliable, healthy and good habits required to handle the good storage and record center architectural firm in Manhattan. Call Mr. Newman at VI 6-4495.

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Temp. 3-4 mos. security exp. to 25 S.I. Agency, 210 E. 38 Ave. Bronx.

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DELICATESSEN CLERK for South Brooklyn delicatessen, good transportation, some catering. Box 644L News.

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Appearance 18-21 yrs. Office. A-1 Co. Steady Work. Rod. Agency, 613 Vanderbilt.

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Office trnees, Top Co. January Grads Apply Today. 17-22 yrs. No Exp. Necess. 904 7 Av (2nd Fl) ex. Davis Agency

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Exped. Short Orders & Salads. 5 A.M. to 1 P.M. Good Salary. BOY'S DINER, 78 Dover St.

CLERK, \$46
Insurance trnee on fire & loss. Send resume D936 News. Chauffeur, 17 W 94th.

CLERK-TYPIST, \$48
Nite acctg student pref. Purch. Nite acctg student pref. 18 E. 44 St.

Help Wanted—Male
MESSENGER, Men's Shop, 5D. \$38 Dalton Agency, 71 W. 42nd St.

OFFICE BOY (18-22)
\$40.00
Interested, starting immediately. No exp. nec. good perm apply for beginner. Give full details, age educ etc. RR854 News.

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nice environment, high school graduate, 9-5. \$36. Harker Inc. 30 Wall St.

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Monday or Thursday
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Must be in good health, co-operative, industrious & bondable 5-day wk. Sanford Agency, 22 Meader St.

Stock cks, learn textiles.
\$40-\$45. A-1 Co. Pelham Agency, 66 Van derbilt.

Stock Boy, 5-day wk., good com.
\$38. Cutter Agency, 99 Madison.

Stock Boy, large dept. store, stdy.
room, to \$50. TOP AGCY, 75 work. \$55. Ransom's, 14th & Hal-sey, Brooklyn.

TRAINER, top corp. sales show-
room, to \$50. TOP AGCY, 75 work. \$55. Ransom's, 14th & Hal-sey, Brooklyn.

Truck driver, part time, 7 AM to
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Speaking of HOBBIES

"YOUNG MEN" IN NOVEMBER

Starting with the November issue (on the newsstands or in your mailbox early in October) this magazine will have as its name: "YOUNG MEN." Contents will be just as they are right now but with extra space accorded the radio control and model boating departments! Descriptive sub-heading which you'll find on the cover right under "YOUNG MEN" will be "Hobbies—Aviation—Careers". This is the third step in Street & Smith's carefully planned program to bring model building and constructive hobbies to all the young fellows of America. No need for oldsters to get alarmed, you'll still be plenty welcome; in fact, we've some special plans "in the works" which will enable you to help us introduce model aviation, boats, cars and radio control to all up-and-coming young men! It's all a part of Street & Smith's 100th Anniversary celebration.

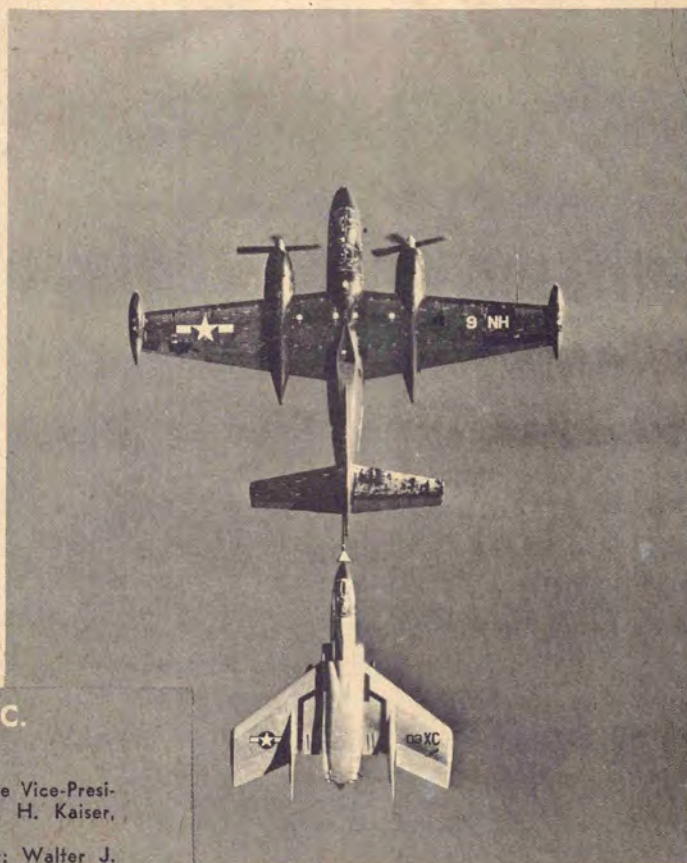
So issue-after-next look for and ask for "YOUNG MEN" at your hobby shop or newsstand. And relax with a hobby!

Cartoon of the month: Hobby dealer saying, "For relaxation I went out and got myself a spare time job."

Isn't that a beautiful shot of a Chance Vought-Navy F7U-3 Cutlass twin-jet fighter from Naval Air Development Sqn. #3 (VX-3) based at NAS, Atlantic City, N. J., refueling in mid-air from a drogue behind a North American AJ-2 Savage tanker plane? Photo by Lt. John H. Cover, USN, was taken from plane flying directly overhead.

More wonderful photographs like that will be gracing the pages of our next AIR PROGRESS ("largest selling air annual in the world") which is now in the works. We have some fantastic things lined up for all air fans. Things like Pete Bowers' incredibly detailed round-up of all U.S. planes in World War II—more of those splendid drawings by Doug Rolfe—and a refreshing story of how one amateur pilot and non-home craftsman built his own private plane for \$500 (specifications: 105 mph, lands at 45, climbs 650 ft./minute, 14,000 ceiling).

All the usual fine aviation reports, photos, charts and specifications that you've come to expect from "Air Progress" PLUS a complete section with Scale Views By Jefferies. Need we say more?—Al Lewis.

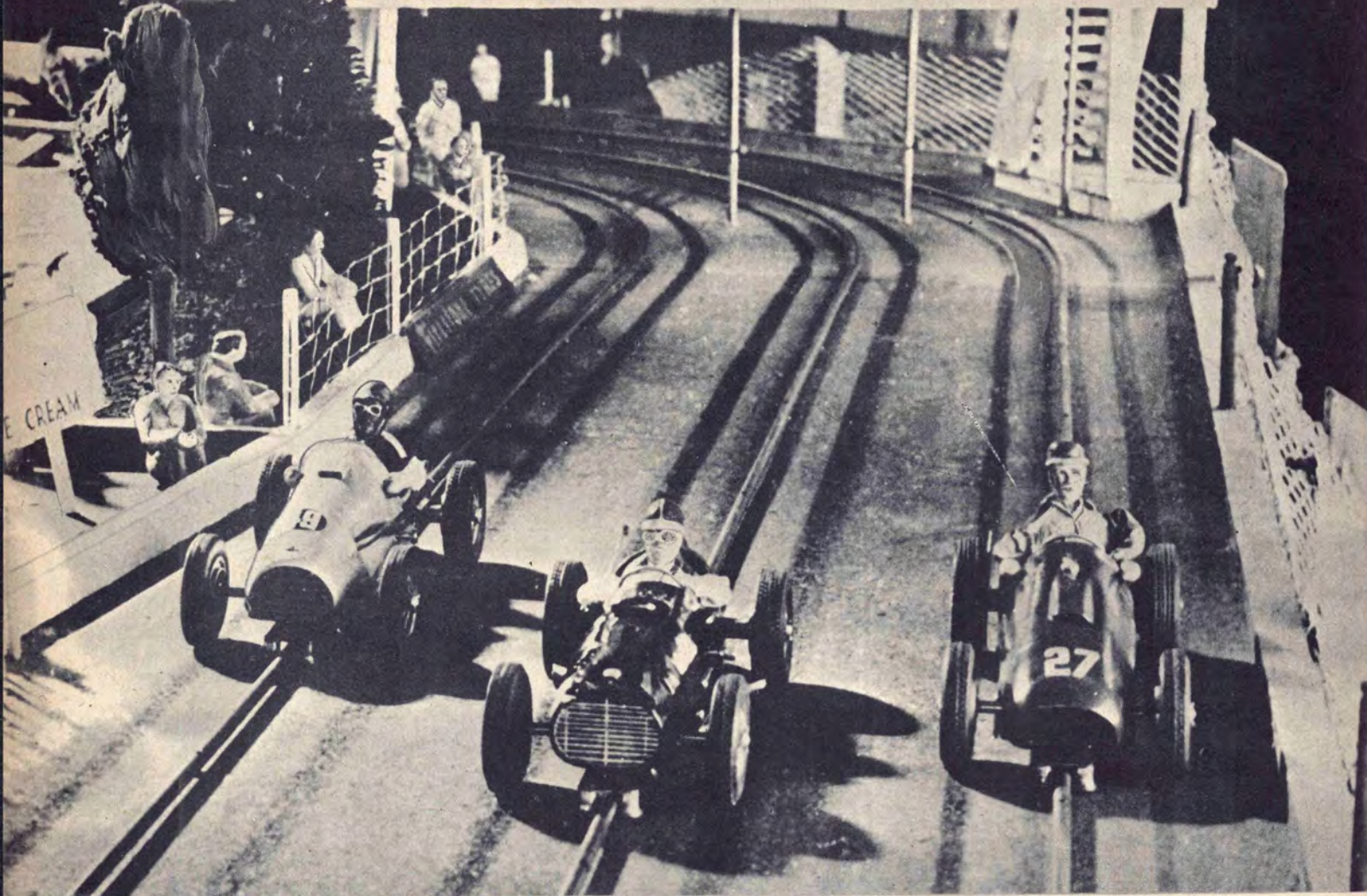


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Our 100th Year—Established 1855

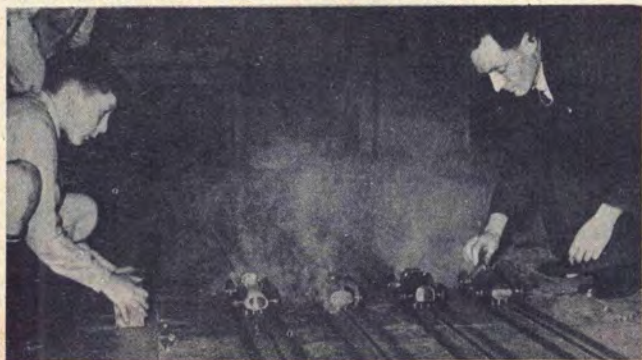
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Portable exhibition circuit is by Shell Oil Company. Since mobility is "must" complicated curves were avoided.

Indoor ground level track for 4-car racing. Young fellow at left has hand on starter trigger to drop restraining pegs.

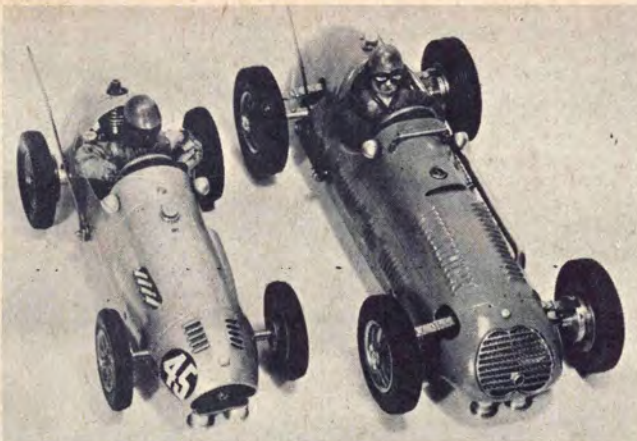


Racing 'Em ON RAILS!

By D. J. LAIDLAW-DICKSON

Two small (.03 cu. in.) Formula Libre (unlimited class) entries. Restraining start-peg is visible in front of car.





On right is 1/12th scale Maserati compared to 1/16th scale Cooper. Allen-head screws on hoods adjust contra-piston.



1900 De Dion powered by .03 cu. in. "diesel" runs on rail track at 5 mph. Fully detailed steering; all springs work.

Thrills, chills but mighty few spills mark this exciting new version of miniature car racing on rails. Sheer speed alone is not enough to win; engines: .03 to .09 cu. in.

■ Past the pits and into the finishing stretch screams the red Ferrari, leaving a beaten Gordini far in the rear; the racer draws level with the leader, equally gay in green, and almost hood to hood they cross the line, while the electric lap recorder gives its impartial verdict in favor of the Italian car . . . 1. Ferrari, 2. Vanwall, 3. Gordini . . . No, not really the record of some European Grand Prix event, but the afternoon's amusement of the local model rail racing club! Cars less than twelve inches long, powered with "diesel" (compression ignition) or glow plug engines with a maximum displacement of .09 cu. ins. and built as perfect replicas of real full-size racers, are now running on miniature tracks, complete with hairpin bends, straights, curves, and all the hazards of a full-size course.

This new slant on the old hobby of model car racing is the answer to the lack of realism that single-car cable racing against the clock has always had to contend with. In England the cable race enthusiasts in their constant search for

more and more "urge" have pretty much priced themselves out of the ordinary fellow's reach—and at speeds approaching the 150 mph offer little of a spectacle for the public. Miniature Grand Prix racing on the other hand insists on scale cars only, limits the engine capacity, and puts the hobby back in the hands of the "kitchen table" modeler.

Rail racing is *not* a new thing. Heavily banked tracks using much the same sort of cars as for cable racing enjoyed its own limited vogue on the West Coast in the U. S. many years ago. The new angle is that tracks are no longer dish bowls, but contain both right and left-hand bends, uphill and downhill sections, and sheer speed as such is not the only criterion necessary for success.

Tracks can easily be built as club projects and installed indoors, so that bad weather is no hazard, and racing can take place in the winter evenings as happily as on a summer day. Prosperous clubs can really go to town in their layouts, with the whole track built on trestles at table level—like a model rail-

road pike—and all the typical scenic features of miniature pits, spectators, advertising billboards and so on. Less pecunious clubs are content to build their tracks to be assembled directly on the floor, in storable sections.

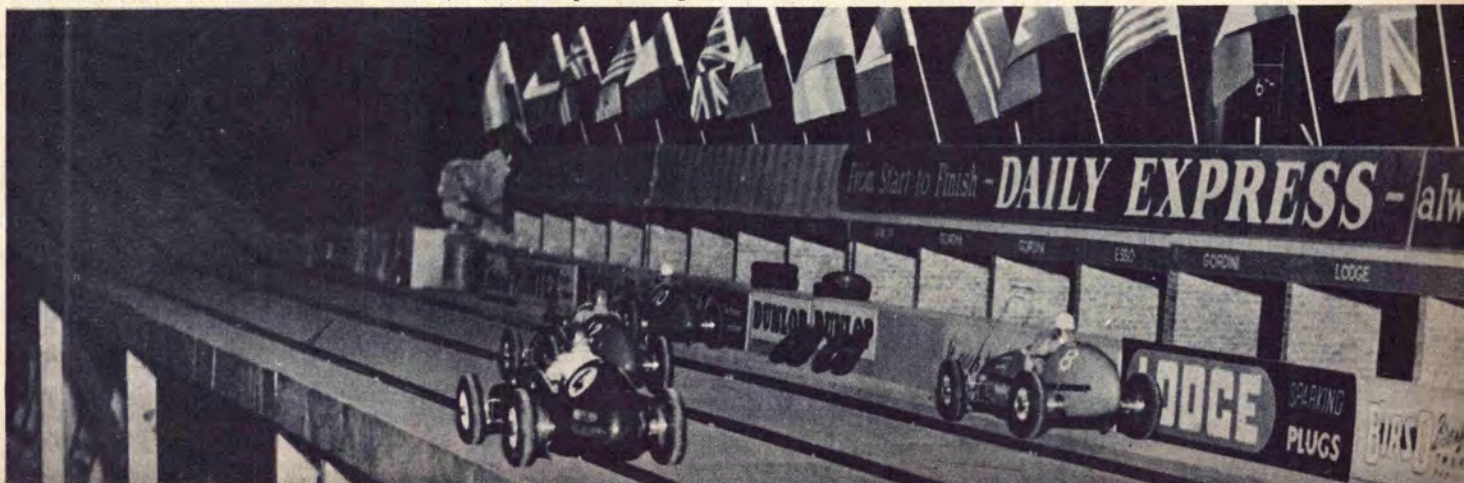
Some clubs have even organized trailer transport so that they can transport their tracks and stage one or two-day stands far from home. Model Road Racing Cars Ltd., pioneer British firm that's done much to popularize the hobby, have a touring track, complete with trestles, electric lap counter, mechanical starting and cut-off devices, which can be unloaded at 10 a.m., "ready" by lunch.

The Model Rail Car Association has formulated 1955 rules for racing which sets up four size groups of scale cars:

For-mula	Engine Size		Wheelbase		Track		Scale
	Min	Max.	Min	Max.	Min	Max.	
1	.06	.09	7"	8 1/2"	4"	5"	1/12
2	.045	.06	6 1/2"	8"	3 3/4"	4 3/4"	1/12 or 1/16
3	.03	.045	5 3/4"	7 1/2"	3 1/4"	4 1/2"	1/16
Libre (Unlimited)	up to .09"		up to 8 1/2"		up to 5"		Free-lance

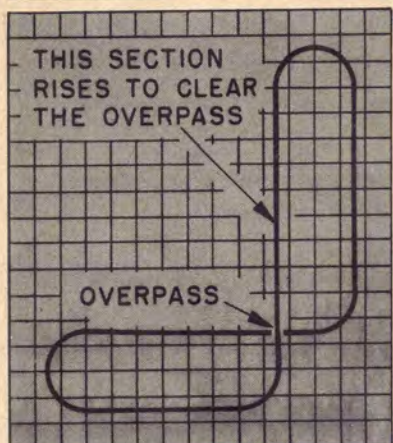
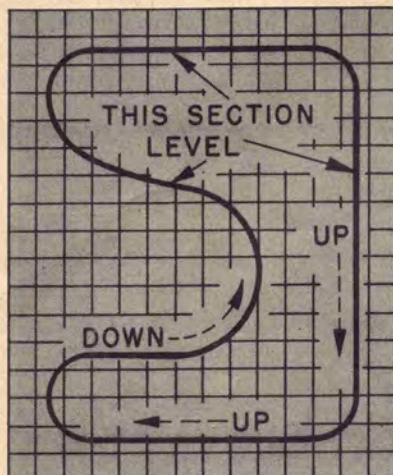
Maximum weight—3 lbs.

Ambitious circuit on trestles with hill climb (at left) and pits with sponsor's ads. More substantial than necessary.





Portsmouth track (left) is 160' over-and-under "eight"—also shown in lower diagram. Since track is semi-permanent, it does not have "built-in" starter; separate storage battery operated starter is utilized. Track is level except for overpass. Double-U layout is 120' portable ground level track; gradient rises to 2'—tough on inefficient cars. (Right) Plastic toy car converted to rail racing.



This offers builders a wide choice of engines on the British market, favorites being Allbon Javelin, Merlin and Dart, Mills, Frog, and Elfin. The German Webra also offers possibilities. In the smaller classes direct drive is the most popular, with a clutch embodied in the driving wheel dummy brake drum. For .06 cu. in. and larger clutch and gearbox drive has proved most satisfactory. So far little work has been devoted to spur drive. Indeed, standard engines as received from the makers are generally installed without much work on "hopping up." This is to be expected as the hobby ranks are filled, in the main, from fans without extensive workshop facilities. One or two enthusiasts with such facilities have developed their own engines but have found the race is not always to the swift: an ability to complete the course is more important than a spectacular half-dozen laps and fade-out!

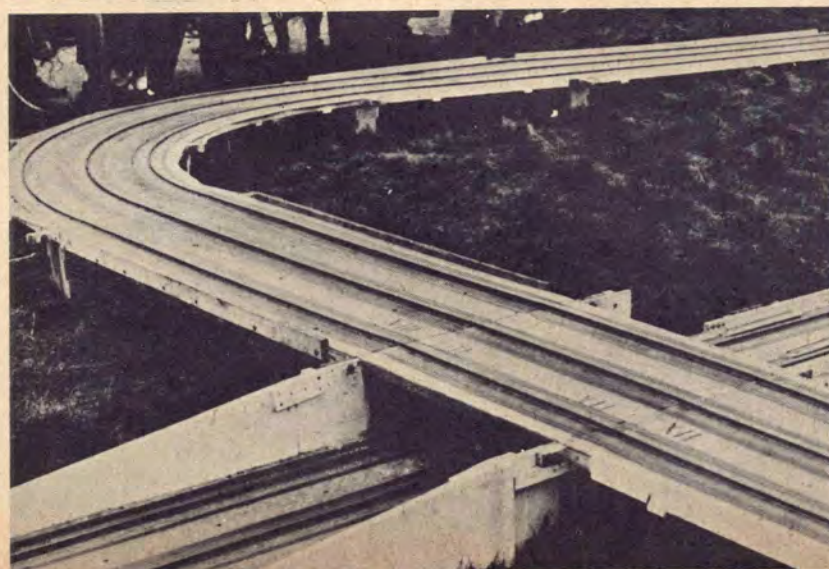
Home-built cars are usually based on a mild steel or alloy pan to which a balsa or obeche wood body is attached. Such bodies are reasonably smart when new, but do not take kindly to the "bashing" that comes with frequent racing; their paintwork soon gets worn. However, some dozen of the most popular racing cars have been developed commercially in model sizes and light alloy shells are readily available. These can be bought in the rough, or finished in the buyer's choice of color. These bodies stand up to anything, and even after a couple of seasons' racing.

Dummy drivers are usually installed—carved from balsa and dressed in regulation racing coveralls, crash hats and so forth. In the same way the search for scale realism extends to filler caps that

really fill the tank, and every other gimmick that can be included, such as independent springing, leaf springs that work, proper exhausts, steering wheels. All that so far is lacking is a dummy driver who will shake an angry fist when passed unexpectedly!

Secret of the success of this kind of racing lies in the rail attachments, familiarly called "zonkers." These little guide wheels, located on plates and attached front and rear, are the subject of world patents by the inventors (U. S. Patent No. 225-231 Canada 615-163). The patentees supply the complete outfits at cost price to members of clubs affiliated to the Model Rail Car Association, which represents only a quarter of the price at which they are sold to the general public. Anyone wishing to make their own "zonkers" is welcome to do so, provided that he affiliates personally or through a club. The rail itself is a 5/16th in. diameter tube or rod, fixed at a standard height from the track base by means of spacers .16 in. high, through which wood screws go down into the surface. It is thus possible for any builder to know that his car will perform on any other track as well as at home.

"Zonkers" are fixed to turn with front wheels, while rear attachments are sometimes fixed and sometimes also free to turn on a pivot. Some attempts have been made to introduce automatic braking on corners by means of "tufnol" blocks at the rear in lieu of rollers. This has had a limited success, enabling faster speeds to be made on the straights without the consequent wheel slip and slow getaway on the corners which usually accompanies too high speed. Generally, simplicity has achieved better results than such attempts at complication.



CROSS SECTION THROUGH GUIDE RAIL



Patented system of mounting guide rails (above). Left: detail of crossover on Portsmouth track. Sections numbered to speed assembly and attached with bolts. On lower level to right of bridge are "make and break" plates actuating lap-counting clocks—plug-ins for which are on the far edge. Another set is located 3' away. Cars trip first plate to register lap, then pass over second plate to re-set for next lap.



Author Gene Kropf continues his valuable report on career possibilities within the aircraft field by taking you on a trip through the production department of a big plane-making concern. You'll find some pretty fancy salary figures here — plus lots of real information on how to prepare for a good position.

Engineering Jobs

In The Aviation Industry



■ In our first discussion we pointed out some of the unprecedented opportunities offered in just one phase of the aviation manufacturing industry. We saw how men with bold ideas developed a "dream" into an actual airplane—from preliminary design to flight test and acceptance by the customer. We visited the ten departments concerned with Phase One . . . and pointed out the many opportunities there for you.

The opportunities for you in the aircraft manufacturing industry are not limited to aircraft design, however. The plane must now be produced. Let's move on to Phase Two—Production.



Aircraft production — methods, materials and processes—has progressed just as rapidly as aircraft performance itself. If you had walked into an aircraft factory in 1927, you would have seen a plant about the size of an automobile garage. There would have been plenty of activity—a small group of men doing just about everything — sewing, painting, welding, and carpentry. Chances are the chief engineer would have been there, too, helping the employees construct the airplane by hand. Airplanes had always been hand-made, from the very day man proved he could fly. This "custom" manufacturing produced 45,000 airplanes from 1903 to 1938.



The aircraft industry was put to an acid test beginning in 1938, when rearmament, Lend-Lease and World War II demanded the construction of 45,000 aircraft to be delivered in the next two years! Here is where the aircraft factory, as we know it today, got its real start. It called upon other industries to show how to gear for mass production. Standard automotive procedures were used in many cases along with standard types of machinery.

Even during the war years, aircraft design changed so rapidly that available

manufacturing equipment and processes were quickly outdated. It was at this point that aviation proved itself to the world as being the most versatile and resourceful industry ever known — its member firms not only designed the airplanes but, after being told it could not be done, they designed the machinery to produce the planes!

As an example, Lockheed Aircraft needed a machine capable of shaping a wing panel in one piece as required by a new design. Such a unit was not available, so Lockheed engineers and production men went to work to design this machine at a cost of \$5,000,000. Today, at Lockheed, this piece of equipment will take a 3,200-pound slab of tough aluminum alloy 32 feet in length, gouge it out with precision milling until only 389 pounds are left. Salvageable chips from this single piece weigh more than Lindbergh's "Spirit of St. Louis." This one-piece wing panel is stronger and lighter than the old style panel that required 1,500 separate parts and 5,000 individual rivets!

Another development in the design of equipment by the aircraft manufacturers resulted in the largest double-action forming press in the world. It forms parts up to 27 feet in length and ten feet in width.

The modern aircraft factory is an amazing place where you see craftsmen engaged in intricate hand work on the one hand and neighboring workers running industrial mammoths which pound away with a force of a thousand sledge hammers. Scores of different skills, the work of hundreds of machines, dozens of materials go into production of airplanes . . . and offer you opportunities unheard of just 12 years ago!

PROJECT DESIGN. Let's take a look at the chart of Phase Two which appeared



These men-at-work photos supplied by the Boeing Airplane Company show (from top): 1) antenna laboratory engineers working with scale models; 2) teamwork which begins at the design table—here ideas are interpreted and brought to effective reality; 3) through wind tunnel checks hundreds of hours of flight test time are saved—again by engineering test teams; 4) X-Ray diffraction and fluorescent analysis probe metals to determine changes in their atomic structures brought about by heat; 5) research engineer moves metal specimen into glowing maw of heat-treat controlled atmosphere furnace in metallurgy unit.

AERO ENGINEERS



in the preceding issue. The section headed "Project Design" is the one we will visit first on our tour of aircraft production.

Project Design is responsible for the design of an airplane on a production basis. Don't let this confuse you—we are not going to design a new airplane. In this department we will break down the prototype design into logical production components. The prototype in most cases was not designed for ease of assembly, disassembly and maintenance. For example, the removal of the engine from the prototype may be a complicated operation taking hours or even days because of the method of installation. The Project Design department revises the installation method to allow quick removal of the engine—in minutes!

This department simplifies structural parts and equipment so they may be more easily fabricated, installed and removed. P.D. workers also determine, through design changes, which parts are to be made as a unit—wing panels, tails sections, etc.

The work does not stop here. This department has many other functions. It is responsible for the preparation of formal, detail, assembly and installation drawings; it releases production drawings in logical sequence to the manufacturing sections of the company. As the need for new production design procedures become necessary, Product Design calls on research sections to investigate and test these procedures. As the new designs are proved, allowing new structures to be used, the section advises preliminary design of procedures that may be valuable in more advanced aircraft.

The Project Design department keeps tab on the shops, checking production to see if the design can be further improved for easier fabrication with present manufacturing equipment. It furnishes technical assistance to the sales department and to the customer service department to make sure that the plane is easy to maintain from the accessibility standpoint.

The Project Design department, as the largest user of technical personnel in the entire engineering organization, offers the beginner the greatest employment potential. In addition to being a major career, it furnishes background for engineers who may later transfer into other units such as Preliminary Design, Liaison Engineering, Check, Production Engineering and staff specialists. Those who are successful in Project Design generally have originality, imagination and the ability to describe their ideas by using

orthographic projection (a phase of mechanical drawing). A large amount of your time will be spent on a drawing board. Conceiving the idea, translating it to practical use, performing the calculations and describing them in the engineer's universal language—the drawing—are your basic responsibilities here.

The minimum requirement for employment as a project design engineer is a Bachelor of Science degree in Aeronautical Engineering. Starting salaries range from \$4,600 to \$4,800 annually. Top salaries in this section run as high as \$18,000.

PROJECT LIAISON. As the Project Design section completed each component, the drawings were sent to the manufacturing sections for fabrication . . . the plane has been in production—"in pieces."

The next section we will visit is the Project Liaison unit. This section is the manufacturing division's engineering representative. Up until now it has been engineering who has voiced opinion on manufacturing procedures, methods and design. Here's the spot where "manufacturing" gets the opportunity to suggest changes in design dictated by present manufacturing procedures which require engineering knowledge. The Project Liaison section investigates and corrects all manufacturing difficulties arising from inadequate design or misinterpretation of drawings or engineering data. The duties of a Project Liaison Engineer are much the same as those of a Project Design Engineer—with the exception that he looks at his problems from the standpoint of current manufacturing equipment. He must not only be a good design engineer, but be well versed in manufacturing methods.

College graduates do not enter this field directly, but may qualify for learner assignments upon completion of approximately one year of drafting experience with a design unit. Starting salaries range from \$4,700 to \$5,000 annually. A man with five years of experience will make approximately \$8,400 annually.

PRODUCTION METHODS. PRODUCTION DESIGN — MATERIALS AND PROCESSES. The next three sections we will visit are Production Methods, Production Design and Materials and Processes. Actually, these three groups can make life easy or miserable for the Project Liaison engineer.

Production Methods develops improved ways to make a part exactly as the design calls for. This section is primarily concerned with cutting down production costs with new methods. For example, a particular fitting machined from a forging would cost \$7.42. This same fitting machined from impact extrusion (a process which squeezes metal under pressure, using the same principle as squeezing toothpaste out of a tube) costs only \$4.40. It is the responsibility of P.M. to keep production costs in line with original design estimates.

Production Design develops improved ways to make a part similar to what the design calls for using the latest tooling, facilities, manufacturing methods and production development. For example, a particular loading ladder using welded construction called for 40 components, 4 attachments and 240 inches of welding. By changing the design slightly, and casting the ladder rather than welding, the ladder was made with eight components, 28 attachments, \$3 cost saving and a 2.46 lb. weight savings.

Materials and Processes are concerned with developing new materials, testing and inspecting present materials and processes being used. It will recommend a substitute material for a particular part or major component. M. & P. not only maintains close contact with manufacturing, but also with every other department including engineering and purchasing. For instance—it was this department that was responsible for the use of titanium in aircraft. This high-heat-resistant metal is being used today in exhaust sections of jet aircraft. Plastics have received special attention from this department in recent years as a possible solution to the heat barrier.

You can see that these three groups—Production Methods, Production Design and Materials and Processes—are very important to the final design of the production model. When the plane has reached this stage in design it should be at peak production efficiency from the standpoint of cost, performance, materials and maintenance.

Employment requirements for the three groups are as follows: New college graduates with a Bachelor of Science degree in Aeronautical Engineering are not normally assigned to a Production Methods unit. However, on occasion, they are brought in on a trainee basis. Best preparation for an assignment in Production Methods consists of lengthy design and manufacturing experience, preferably in the aircraft field. With such preparation you can expect to earn from \$6,000 to \$7,800 annually.

To prepare for eventual Production Design work, it is advisable for the graduate engineer to plan a varied series of job assignments during the first few years after leaving college. A good Production Design engineer has experience in shop problems, both in fabrication and assembly. This is obtained either by direct work in the factory, work as a planner, engineering liaison work or possibly through assignment in manufacturing or production methods. A period of at least two years must be spent in design work with some time in structural analysis. With this background and the accumulation of engineering experience, an engineer in Production Design can expect to receive, an annual wage in excess of \$8,400.

A graduate in Chemical Engineering, Mechanical Engineering or Metallurgy is first assigned to a sub-group covering metallic materials, plastics, structural adhesives, chemical processes, finishes, etc., according to his major interests, to assist in the preparation of specifications and design data. This is the starting position in Materials and Processes, at \$4,620 annually. Eventually he is made responsible for coordination of research programs and the incorporation of new data in specifications, bulletins, and design handbooks. At this time he can go as high as \$10,800 annually.

In subsequent issues Mr. Kropf will cover the "manufacturing" end of aircraft production as well as the many new job classifications that have opened up in recent years within the industry.

■ Despite the odd name and rather wild appearance of this "27 1/4" transmitter, it is a more or less conventional job, a simplified Mac II with storage battery power supply, but there's a good reason for the stripes; it's simply that we feel a unit such as this which normally sits on the ground should be as easily seen as possible. Those who have had their transmitter stepped on or kicked over—and we've seen it happen numerous times—are sure to agree wholeheartedly.

The large case is an effort to combine everything you have to carry to the flying or sailing site—aside from the model itself—into one unit. As far as we can recall, the first such combination we ever saw was owned by Clay Freese of Chicago, and we have never seen anyone else use this scheme. It seems so handy we felt it worthwhile to make up an outfit this way, so that more R/C operators might enjoy the same convenience. The entire transmitter with its power supply is housed in the case. There is also a compartment for two standard pint-size fuel cans and still considerable space for the tools, test meter, repair parts, etc., that the usual R/C operator lugs around.

The case selected for this job is a surplus one that was labeled "Chest, Steel, M5 D28243". There's no telling what all this means, and we cannot guarantee a source for exact same cases. However, there are dozens of tool boxes available in sizes both larger and smaller than used here, so the builder should be able to locate one that will accommodate the amount of gear he likes to have on hand out in the field. The M5 case measures 16" x 7" x 7" (including cover); whatever you do, don't buy a cheap and flimsy cut-rate case.

Now, what about the transmitter itself? Well, the old Mac II has been so popular and so reliable that we decided to use pretty much the same circuit and parts again with a little modernization. The outfit is simple to build and wire up, and all frills have been left off. There isn't even a pilot lamp to tell if you have left the battery switched on; however, you can easily hear the vibrator humming. Tests showed that with some circuit modification, a single 3D6 would put out a very husky signal, and still operate quite conservatively; the plate power input to the tube is around 3 W., and actual RF output has been measured at 1.7 W.—a very respectable efficiency. The outfit is easy on crystals (providing you don't tune it to resonance with no output load—and you shouldn't do this with any transmitter) and three different makes we tried all gave about the same results. In short, everything runs cool and nothing is strained—which is nice to know when your plane is cruising high up and far downwind, and

you wonder if you will ever be able to steer it back!

The entire power supply and transmitter are mounted on a single sheet of aluminum that was bent as shown in drawing on page 26. We won't give exact drilling dimensions for this piece, as it will have to be modified, according to the case you use. The 1/16" aluminum was easily bent using two lengths of 1" angle iron and a small shop vise. Four self-tapping screws hold the chassis in the tool case. Even if you have to change the size quite a bit, we suggest that this layout be followed; a small bracket holds the tube and crystal sockets, and the entire outfit is rugged and well able to take the jouncing in field use.

Another surplus item was used for the antenna support insulator and the antenna itself; these parts were utilized simply because they were on hand, and other type of antennas and support arrangements will do just as well. We felt it wiser to put the strain of the antenna on the case, rather than on the transmitter chassis.

The heaviest parts of the outfit—the power transformer and the storage cell—are mounted diagonally opposite each other, and the final job balances up very nicely. Two aluminum partitions were made to fit the case; one goes right alongside the transmitter and the other forms a compartment for the cell and the two fuel cans. The original tray that came with the case was cut down so that it fits nicely between the shields with an end rim folded over each one. Space between the shields is large enough for props of eight-inch length—longer ones may be fastened to the covc...

A hole is cut in the battery end of the case, so that the 3-ball hydrometer on the cell may be checked. On the front of the case there is a polarized two-prong socket which enables use of the 2 V. cell for starting glow engines, and is also used to plug in charger connections. Some builders might prefer to have the key lead go in through the front or side of the case, but we feel it is wise to leave the cover open when the set is in use, so a constant check can be kept of the meter reading.

When the storage cell is packed into its little compartment put thin sponge rubber all around it, and on the bottom too. It is wise to clamp the cell down, so it can't bounce about when your car hits a bump. Run a small tube outside from the center vent on top of the cell; these cells give off corrosive gas both when being charged and when in use. It would doubtless be wise to cut a shield of rubber or other insulating material to go over the top of the cell, so that tools or other metallic gadgets can't short the terminals accidentally.

The parts of the transmitter may all

You leave your troubles at home when using this compact tool-box transmitter in the field. Even supplies juice to start engine and has space for fuel, props

"Zebra"

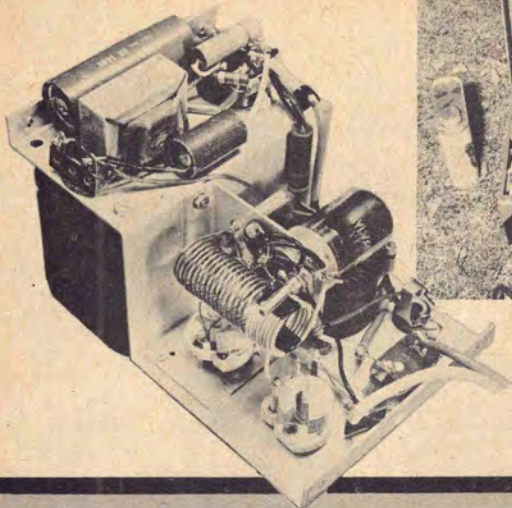
RADIO CONTROL XMTR

By HOWARD G. McENTEE

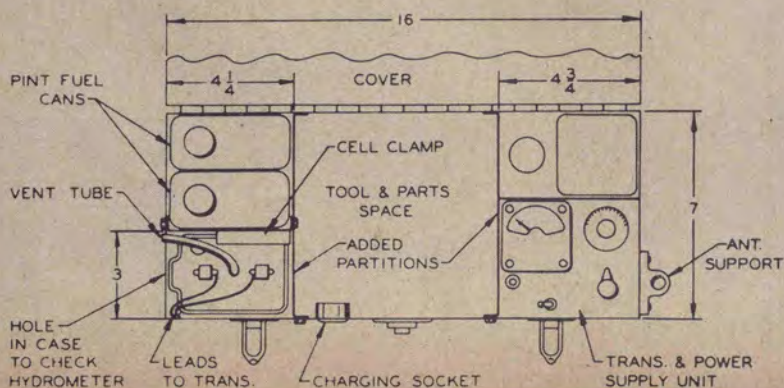
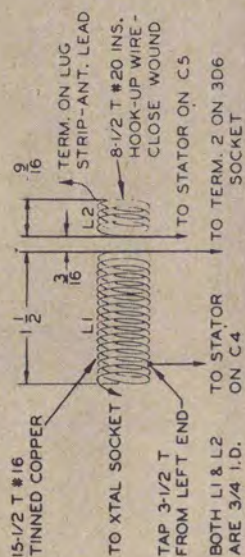
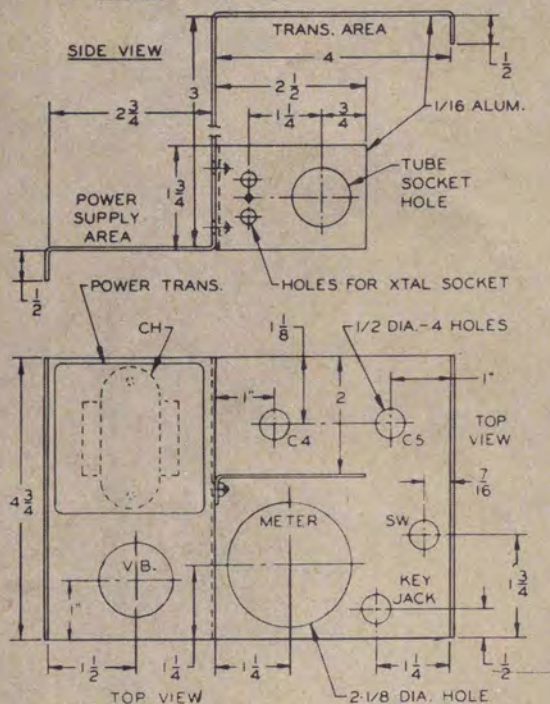
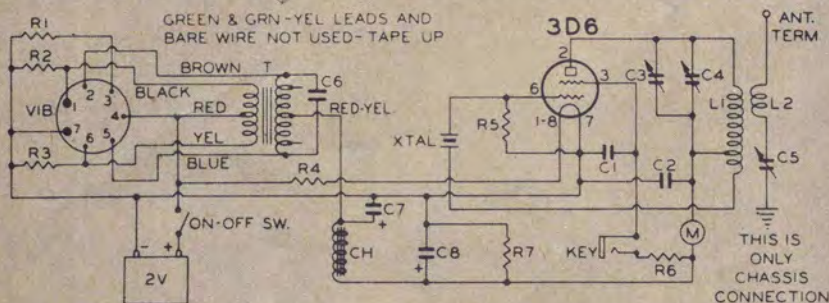
Com'on, Howard, don't look dubious! Reworked Mac II transmitter has surprising power because big case affords good "ground capacity."



"ZEBRA"



While most any suitable-sized metal case could be used the designer suggests that chassis layout be followed as closely as possible for best results.



be mounted before wiring is started; when you are doing this mounting, be certain that the variable condenser parts are insulated from the chassis, and use insulating washers for the key jack too. As a safety precaution, no connections were made to the chassis at all, with the sole exception of the rotor lead from C5, and the latter carries only RF, of course.

It is most important that all connections in the low voltage circuit between the cell and the vibrator and transformer be made with very heavy wire. Auto primary wire is good for this purpose. Also, the power switch should be a heavy-duty one, such as specified in the parts list; an ordinary toggle switch will not do.

The inductance L1 is mounted right on the socket terminals, with the tap going to the rotor lug of C4. Two condensers, C3 and C4, are shown connected across L1. C3 is varied till C4 reads near the center of its scale, when the unit is tuned up in the field; a fixed capacity of about 4 mmf. could be used in place of C3, or you can simply use a larger value of variable at C4. The arrangement shown is flexible, though, and we recommend it.

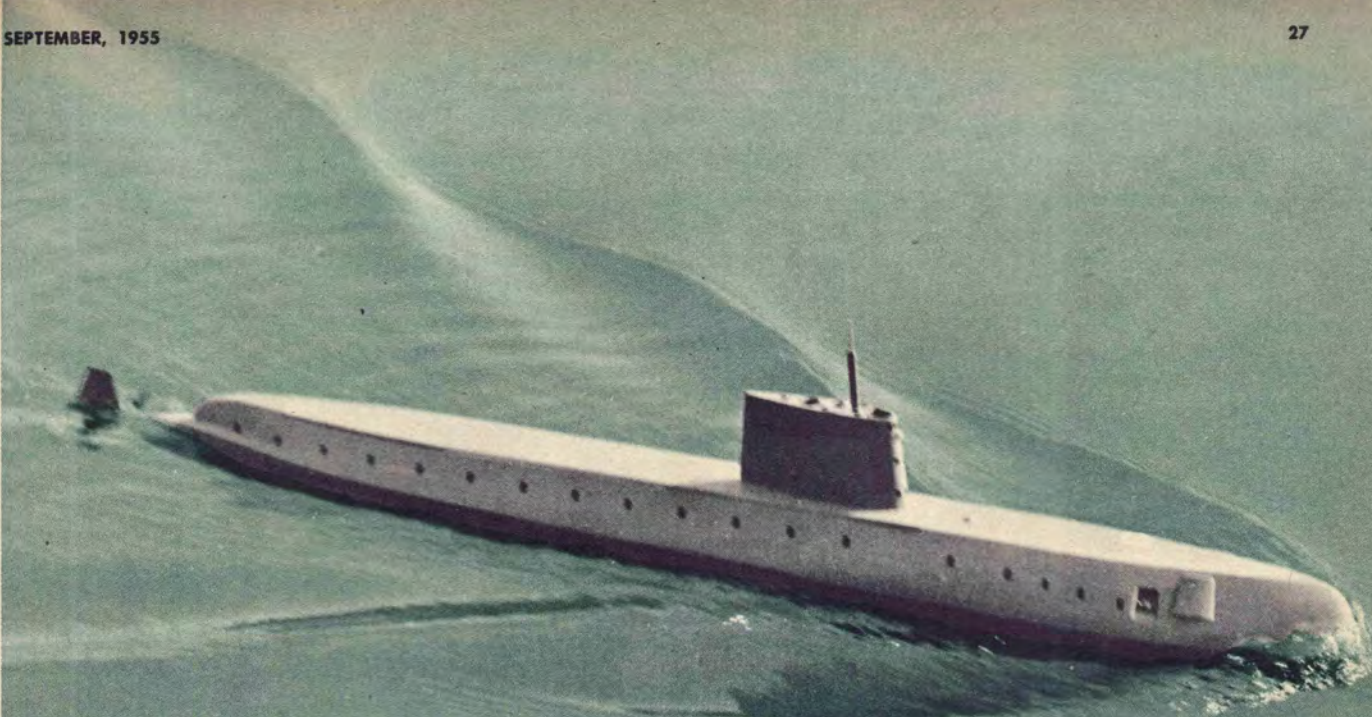
When everything has been connected up and double-checked, turn on the juice without the vibrator in its socket, and make sure the voltage across terminals 1-8 and 7 of the tube is at least 1.45 V. Next, connect a No. 44 or 46 pilot lamp from the antenna terminal of L2 to the chassis; no antenna should be used yet. If you have a voltmeter reading up to 250 V or more, connect it across R7; with the key up you should have a reading of 230-250 V., while with it down, the reading should be 165-180 V. Set C5 with the plates about 1/4 meshed, then close the key and rotate C4.

At one point, the plate current should dip sharply, and the bulb should light up. If the meter reads less than about 12 ma., increase the capacity of C5 a bit, and retune C4. Until you have things tuned up properly, never hold the key down longer than needed to rotate C4 through its full range. When you can get a dip of plate current as C4 is turned, you can set C3 so that resonance comes with C4 at about midscale. On the original transmitter, best power output to the bulb was had at about 15 ma. on the plate meter; at this power, the bulb gets very bright indeed—just about as bright as it does when hooked to a 6 V. storage battery.

If your tests are successful thus far, you can take the transmitter outdoors and try it with an antenna. Set it on the ground (it must always be on the ground, or on some conducting surface, so that the circuit will load up properly) and attach an antenna of at least 9 1/2' length. Remove the pilot bulb, of course. Set C5 at about 1/4 capacity, push the key and rotate C4 till you get the plate current dip. The dip will come at a different setting of C4 than it did when you used the lamp as a load. This is quite normal, and doesn't indicate that you are on a different frequency. We found that best output, as shown on a Field Strength Meter, came when the loading was such as to give about 16-18 ma. plate current, and advise strongly against running higher plate current than this.

For the less experienced operator, here is the action of the plate meter as C4 is turned through its range. Start with the plates fully open; the meter might read around 20 ma., and if you have a

(Continued on page 68)



Radio-Controlled Scale Model Surface Sub:

Nautilus

By FRANK LASHEK and
S. CALHOUN SMITH

**Top top-notch airplane
modelers apply aircraft ways
to miniature sub construction and come
up with sensationally easy system for making "571"**

■ Now that the AEC, General Dynamics Corp. and the U.S. Navy have made Jules Verne's 1860 dream come true, we modelers have a new and fertile field of experiment. All kinds of model subs have been built through the years, some of which dived and never came up. This model *Nautilus*, however, is pretty safe since it is not designed for diving and there is no danger from radio-activity. About the only thing that could bother this sub would be weak R/C batteries.

Builders not satisfied with just prosaic surface running only could actually use this model to experiment with diving and underwater running. There is plenty of room for ballast tanks and the additional gear needed to accomplish submersion. Several features would be required, such as a tight-sealing removable deck and internally mounted control linkages.

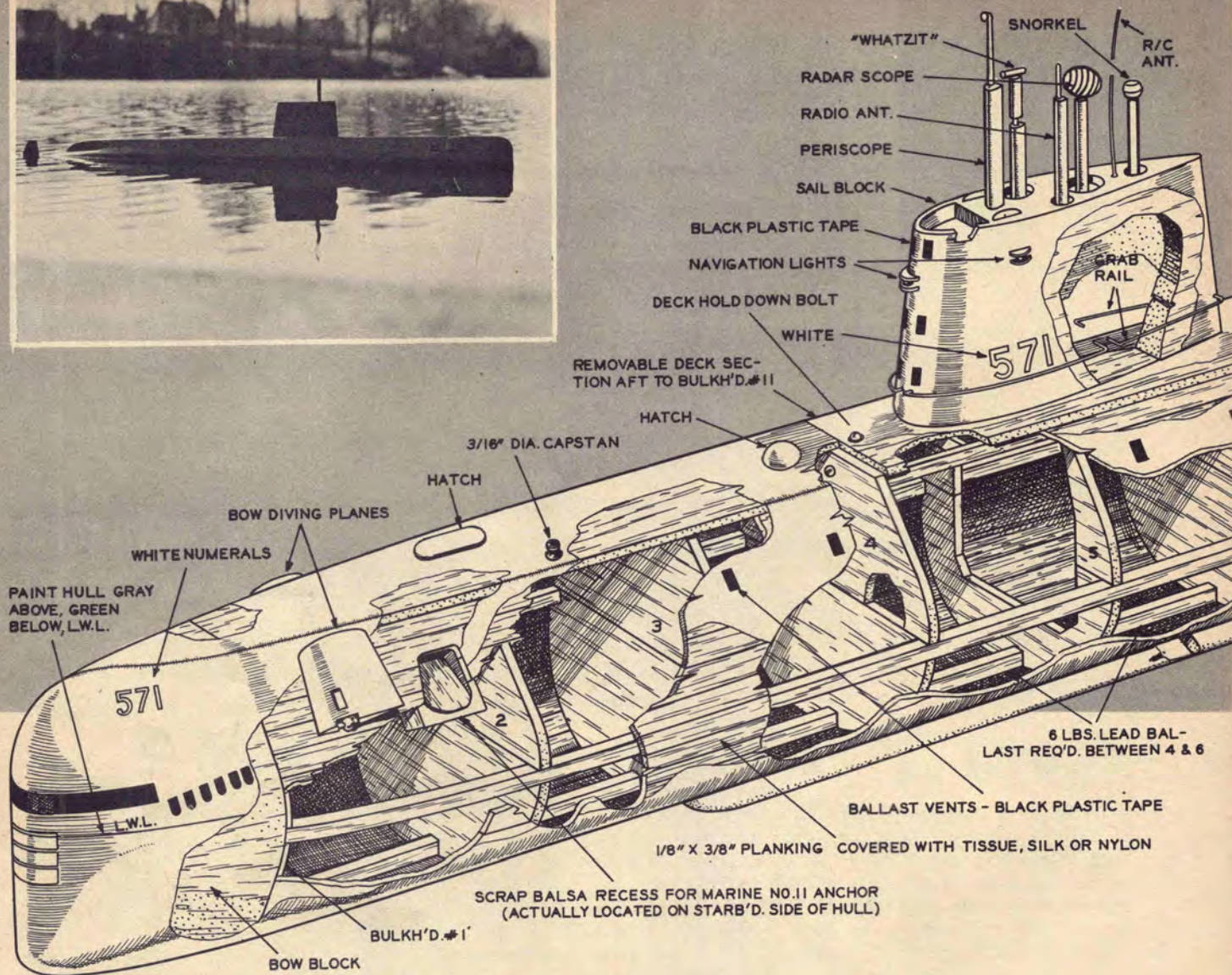
The model pictured is actually the second built by

Frank Lashek. His first was designed by scaling up a plastic display model. Second one was scaled directly from drawings supplied by General Dynamics Corp., so authenticity is assured. Many small details not shown on General Dynamics' drawings were added with the aid of photos. No exact scale can be given for the model since the size of the real *Nautilus* is still secret, but guesstimation would put length at about 312 feet, making the model $5/32"=1'$ scale. The only on-purpose departure from scale is the addition of bilge keels on the underbody to reduce roll and aid straight running.

The idea of using tried and true model aircraft construction in a sub model may seem a bit weird, but in fact it is the easiest way to construct such a model, unless you are a champion whittler and have a shop full of tools and quantities of Ponderosa pine. Indeed, the more advanced builder may wish to build this *Nautilus* of large



Air Trails HOBBIES For Young Men



pine blocks hollowed out. The extra weight of pine would help sink the model to the waterline and reduce amount of ballast needed.

Which brings us to the only real bug turned up when balsa construction is used. Any boat or sub model built of balsa is very buoyant in the water. Ballast must be added to bring the boat down to scale waterline. Lead was used in the *Nautilus* model, but other cheaper materials such as sand, pebbles, even plaster of Paris can be put in hull bottom to achieve the desired result. Bird shot can be purchased at gun shops for about \$2.20 for 5 lbs.—this is considerably cheaper than plumber's lead or solder bars.

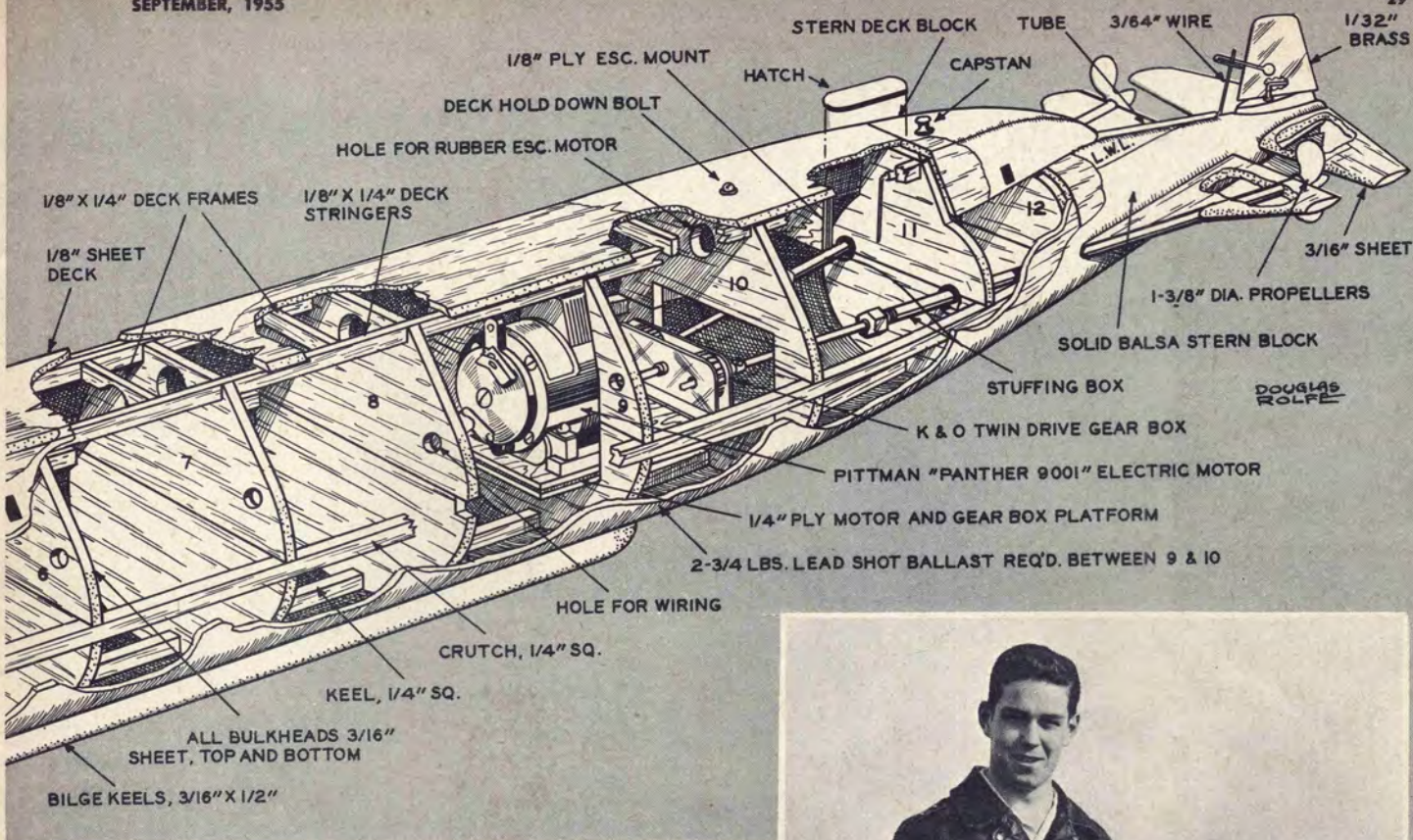
Enough of that for now; let's tackle the construction of the *Nautilus*. Cut out the bulkheads using the patterns given on the plan. These are made of top and bottom halves. Note that bulkheads 5-6-7-8 and 9 have same outline, but cutouts on inside are different. The lower half of hull is built upside down over plan view. Pin $\frac{1}{4}$ " sq. crutch down over plan outline. Cement lower half of bulkheads to crutch from front to rear. Check positioning with a square. Add $\frac{1}{4}$ " sq. keel and let this assembly dry before planking. Three-foot-long planking strips are not quite long enough to reach from bulkhead 1 to 12, so alternate planks should be started at either end. The space remaining can be planked with a short strip and backed up with a butt plate where ends meet, or cut planking so ends butt together over a bulkhead. Plank hull bottom starting from

keel and working around each side.

When hull bottom planking is dry the assembly can be taken up from the work board. Motor platform is next cemented in place. Motor, gear box, shafts and tubes are placed in position. Notch rear end of crutch for shaft tubes. The motor and drive line should be fitted into final position and checked for good working order since access to this area is difficult later when top of hull is completed.

Now add bow and stern blocks. Rough-carve before cementing in place. The stern hull block is symmetrical and can be lathe turned if equipment is available. Next add top halves of bulkheads and complete planking of hull. The area of the sides just below the deck is flat sided so this may be cut from sheet if desired to reduce amount of planking. The hull planking and blocks can now be sanded to final shape. Work carefully and don't apply too much pressure since planking may sag between bulkheads. The forward part of the deck may be left off until later when model is ballasted or it can be put down permanently now. Make the removable deck section, note stiffeners on underside. Make the sail (conning tower) of block or built-up construction, cement to removable deck. Add stern diving planes and shaft fairings. Give entire model several coats of clear dope to aid final sanding. Be sure to dope inside of model to protect wood from water.

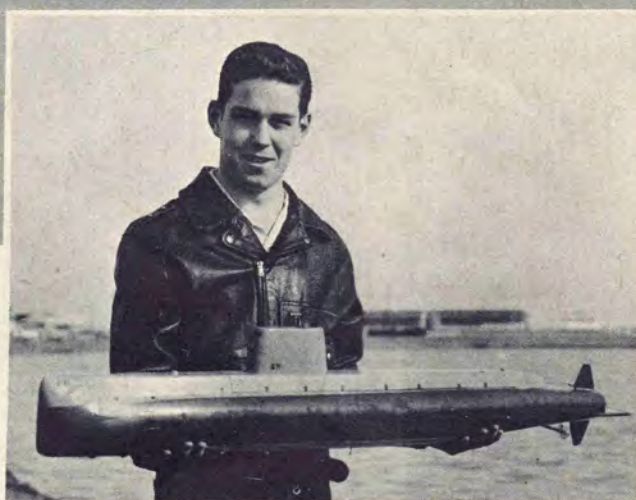
External finish can now be applied, because model will have to be put in water for ballasting. Cover entire hull with heavy tissue. Apply strips about $1\frac{1}{2}$ " wide on curved



portions of hull. Silk or nylon could also be used if a more durable skin is desired. Regular dopes can be used since there is no fuel-proofing problem. Give tissue two coats of clear dope and sand smooth. About four to five coats of auto primer are next applied and wet sanded. Fill all cracks with primer, not dope. Final color is battleship gray above waterline and dark green below. Apply three to four coats of gray over entire model then mask waterline with Scotch Tape and apply three coats of green dope. A light rub down with rubbing compound can be given model, but this is not absolutely necessary since scale finish is dull rather than glossy.

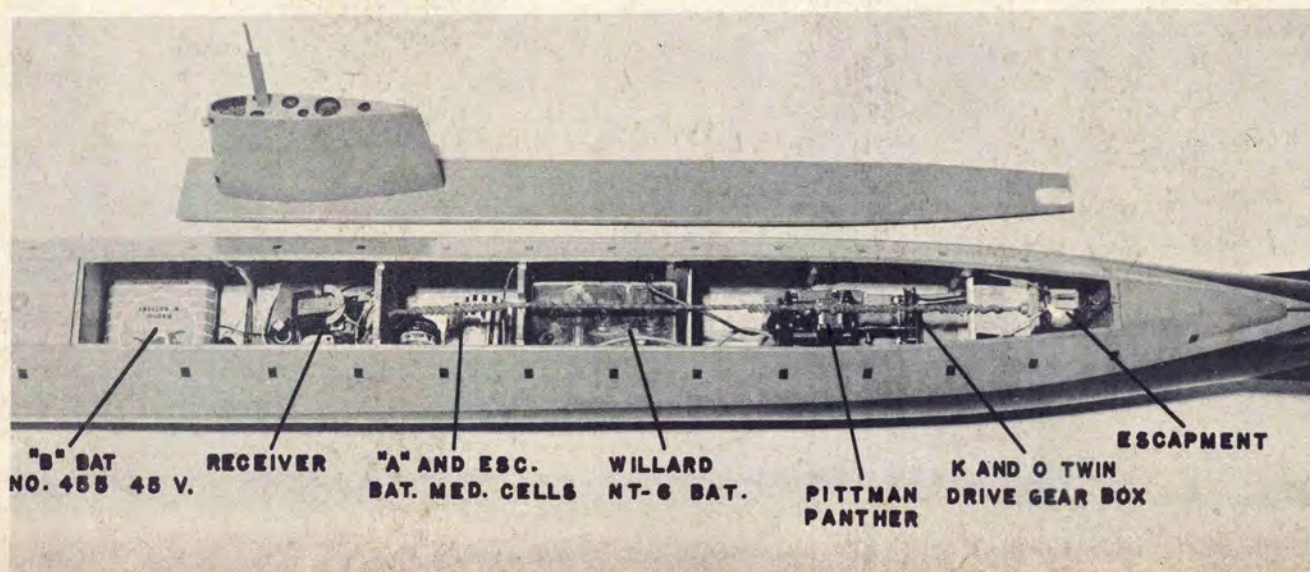
Installation of radio gear, rudder drive and motor can now be made. Note position of the various components on the drawings. These are so placed to aid ballasting. However, additional ballast will be needed. The original model

(Continued on page 61)

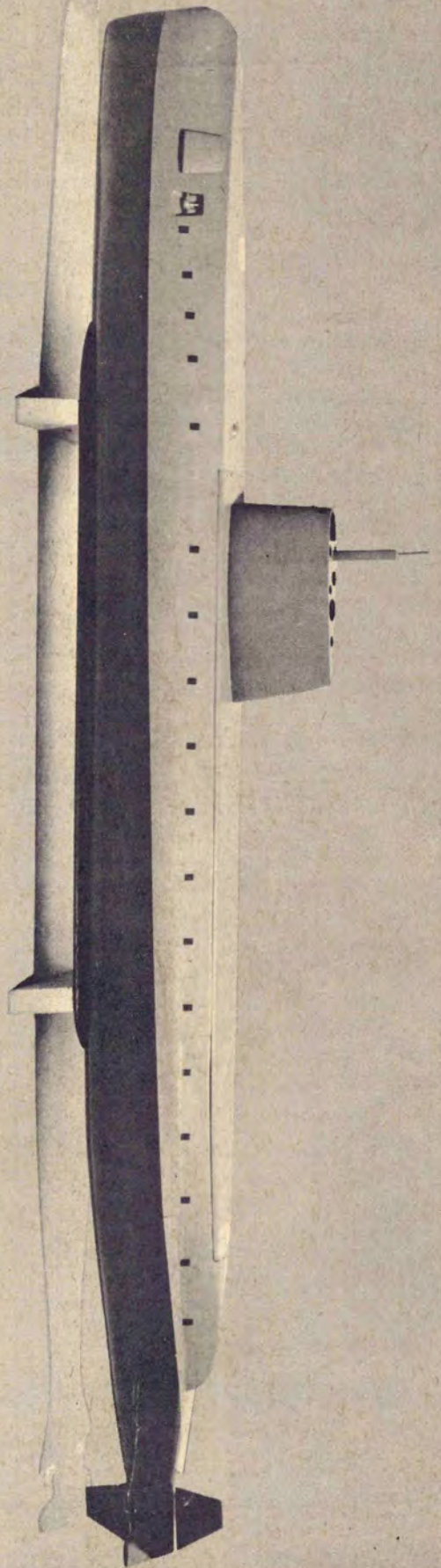
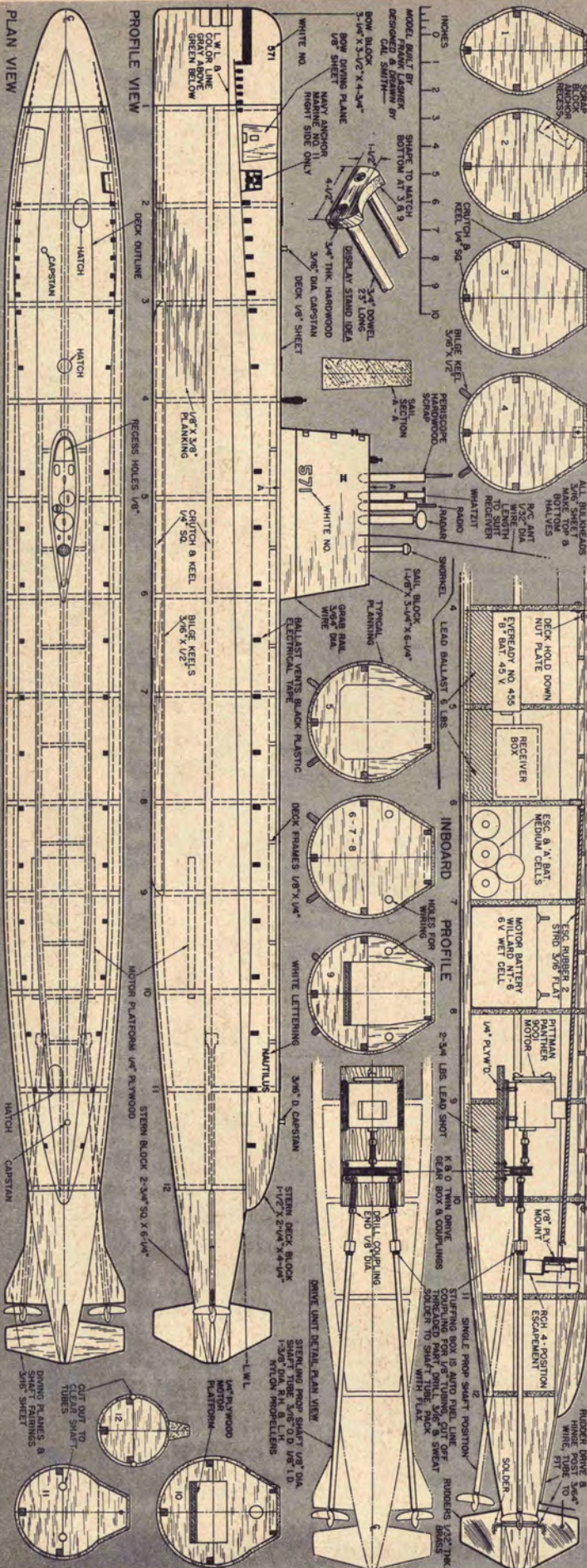


Alternate single propeller installation was used by Mr. Lashek on his first model (no, girls, this handsome chap is not F.L. or S.C.S.). Model travels faster on one prop than with two!

Full size plans for constructing Smith-Lashek non-submerging R/C Nautilus are available from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (#955-50c).

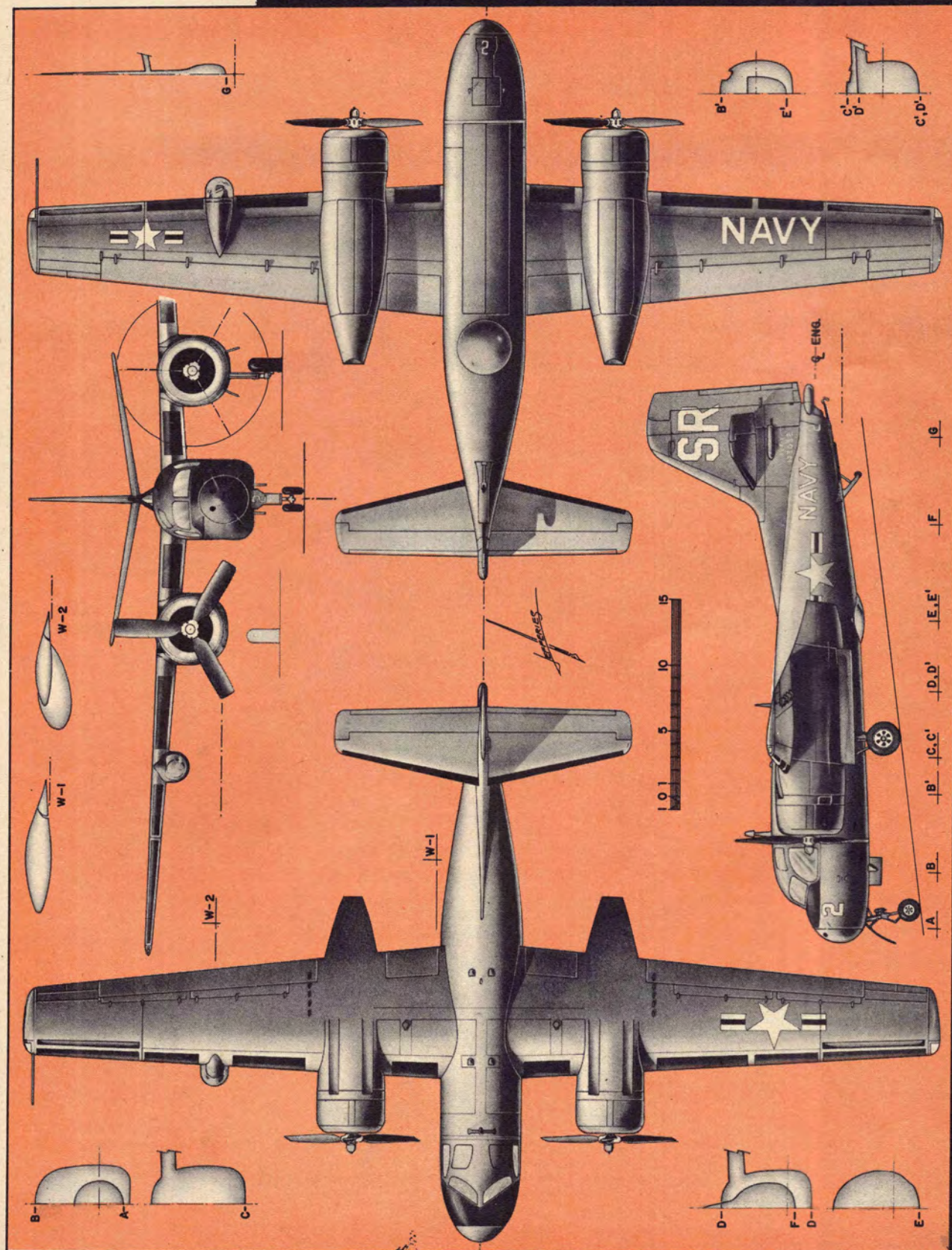


NAUTILUS



SCALE VIEWS BY JEFFERIES

GRUMANN S2F-1



Serving in a dual role of submarine hunter and killer, the S2F-1 has an elaborate assortment of electronic gear which enables it to ferret out a deeply submerged underwater raider and end its career with depth charges. These are carried in a large bomb bay. Electronic equipment consists of a retractable radome in the belly, a magnetometer in the telescoping tail-slinger and sono buoys fired by springs from rear of engine nacelles. Powerful light on right wing helps night-search. Powered by two 1,450 hp Wright R-1820s. Wings fold for stowage aboard carriers. Also built under license by de Havilland for Canadian Navy.

Serving in a dual role of submarine hunter and killer, the S2F-1 has an elaborate assortment of electronic gear which enables it to ferret out a deeply submerged underwater raider and end its career with depth charges. These are carried in a large bomb bay. Electronic equipment consists of a retractable radome in the belly,

Photography & Models

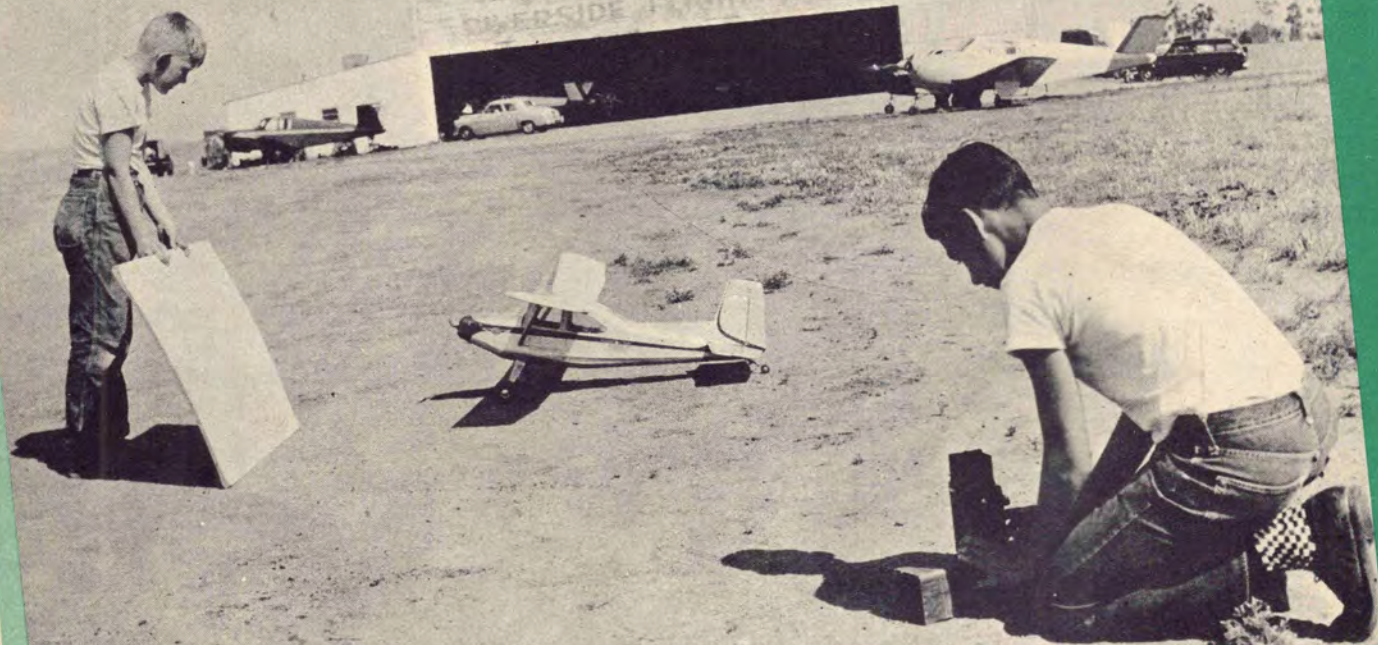


Photo No. 1 illustrates use of reflector board for "fill in." Camera is twin lens Argollex loaded with Plus X film: 1/100 second at f/11. Shot on West Coast.

Realism "Shots"

AT THE AIRPORT

Plenty of valuable tips here for everyone. Profit from Johnny's mistakes and save yourself time, trouble and money!

Now that your model plane is finished to perfection and while it is still new (ssshh—in one piece), why not break out the camera and take a few pictures so that you will have a permanent record of your craftsmanship?

Here are a few suggestions which may help you to do a better job of taking a realistic picture of your model.

In photo 1 you will notice the photographer is resting his camera on a block of wood to give a low angle of view "in scale" with the model being photographed. A smaller plane would require a lower camera position. This block also serves as a firm support for the camera, resulting in a much clearer picture. Also note the helper using a small reflector to help "fill" in the shadow areas under the wings and fuselage. The

reflectors can be most any white or light material, or if desired the board may be covered with crinkled aluminum foil.

In photo 2—oops, John really shook the camera here, and although somewhat exaggerated in this example, camera movement is one of the chief causes of poor pictures. Press the shutter release smoothly and if no tripod or camera rest is being utilized, hold your breath and the camera against your chest or face while you click away. And watch out for your own shadow as well as the on-looker's. Somebody wandered up just at the wrong time here and cast his shadow right across the foreground.

Johnny got over "jerky camera" in photo 3, but now he's in trouble in other ways. First the focus is on the background, which besides being unsatisfac-

tory, causes loss in realism. Second, in spite of using the block of wood he has somehow tilted the camera. The horizon must be kept level.

Now he has settled down and is doing a little better. But right after taking photo 4 he realized an orange filter would darken the blue sky and lighten the yellow-orange color on the model. In 4 and 5 look for differences in contrast, especially at the left wingtip. In general a filter will lighten its own color and darken others.

Photo 6 shows the use of a flash bulb to fill in the shadow areas, and if your camera is equipped for flash make a few experimental exposures to find the right balance. The danger here is in letting the flash overpower the sunlight.

(Continued on page 81)



Photo #2 is a lot like hundreds received by ATH. Camera shook when exposure was made. If you've no tripod, look for walls, bench tops, fences upon which to rest camera.

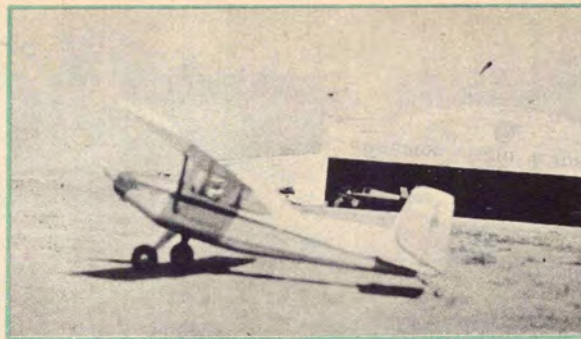


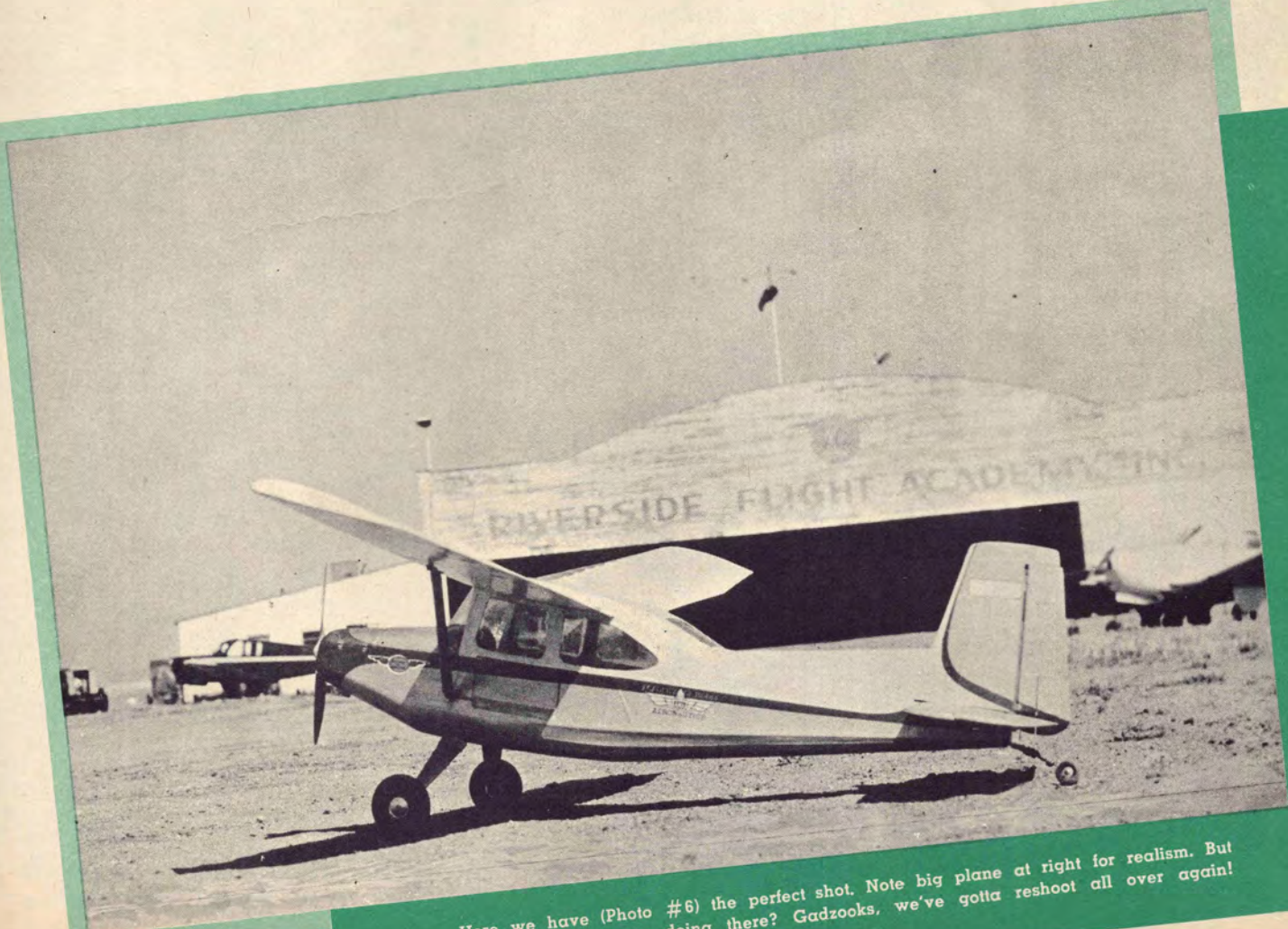
Photo #3 is not bad if you're interested in tilted backgrounds and not subject. Watch focusing; before every picture check "distance" setting if no coupled range finder.



Photo #4 is fairly good and superior to 99% of the model photographs (planes, cars, trains, boats, vehicles, etc.) submitted. But notice how filter helps in #5.



Photo #5 is a filter shot and careful examination of this and preceding photograph will reveal minute differences that all add up to a better picture. Filters are vital!



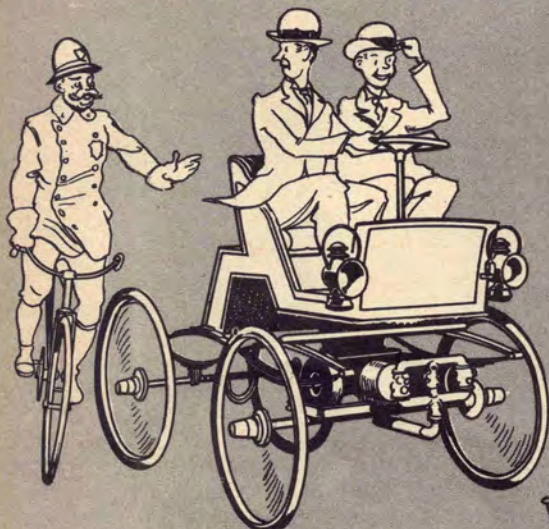
Here we have (Photo #6) the perfect shot. Note big plane at right for realism. But what's that Bonanza doing there? Gadzooks, we've gotta reshoot all over again!

AUTO Progress

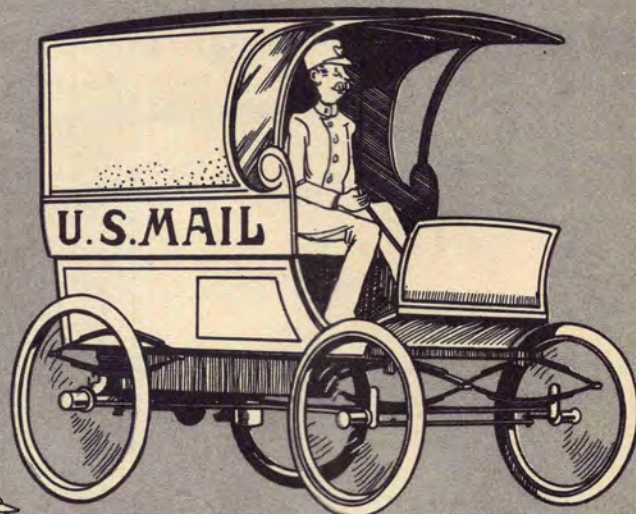
By DOUGLAS ROLFE

Down Memory Lane

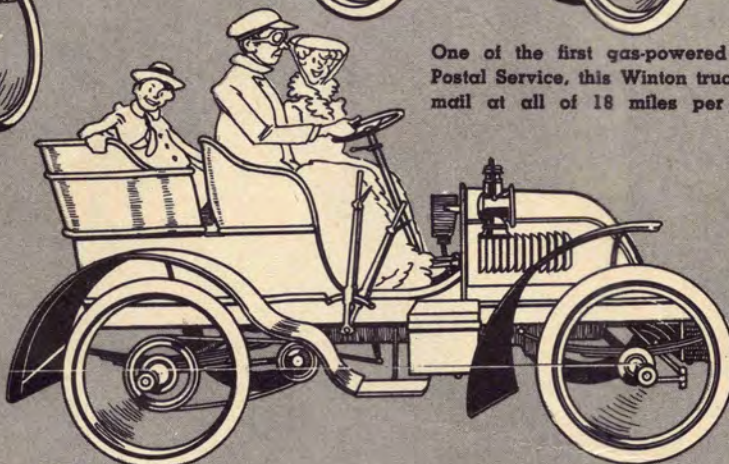
Come along and meet some old friends: King's buggy, Dixie Flyer, Velie, Regal and Winton.



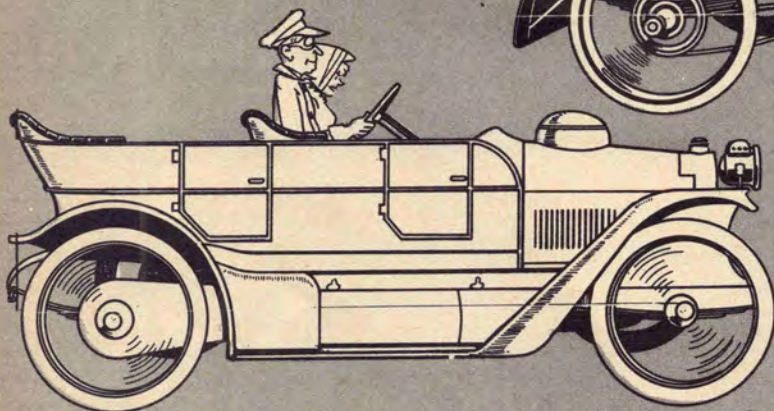
Speed cops of gay nineties rode bicycles. Early Selden shown here had ordinary hard-tire buggy wheels and steering wheel—considered revolutionary in those days! Reference to the Selden Patents will be found in data at page bottom.



One of the first gas-powered cars in U. S. Postal Service, this Winton truck delivered the mail at all of 18 miles per hour in 1899.

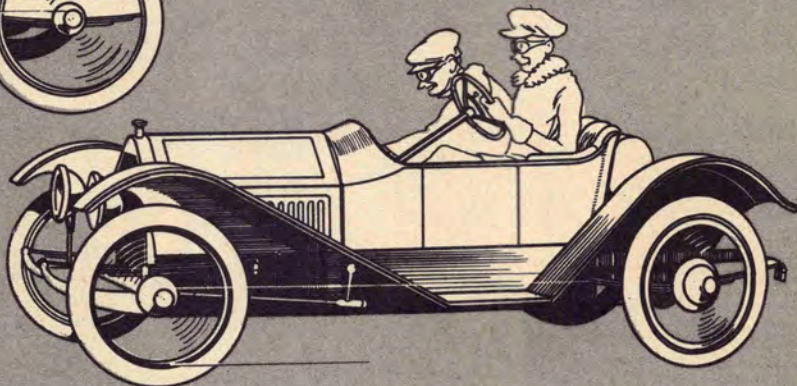


Very first Locomobile (presented in a previous "Memory Lane") was steam-powered job. Here we show that company's first gas-powered automobile (1902). Had engine under hood; final drive from countershaft to rear axle by means of chain and sprockets. Priced at \$3,700.



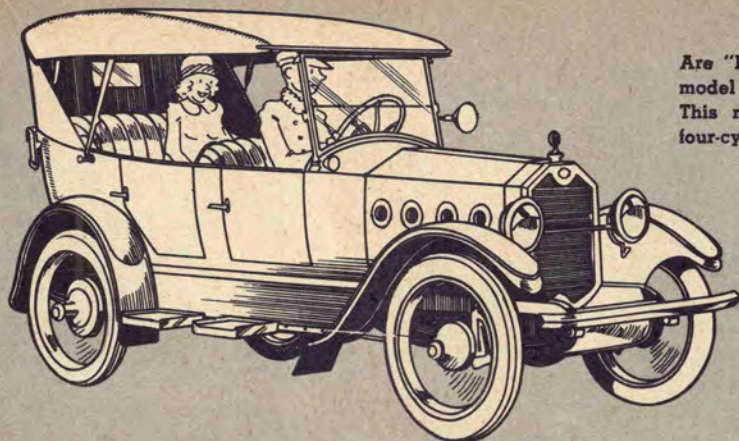
Not to be confused with present Chrysler-made Plymouth, this Plymouth Gasoline Pleasure Vehicle (above) was a 1909 venture. Chain drive enclosed in oil bath; skirted front fenders. 40 hp. Bump on hood: mystery!

The one-time Regal Company specialized in the underslung chassis, introduced this sporty Model M-25 roadster back in 1910. It had a four-cylinder 25 hp. engine, cost a modest \$900.



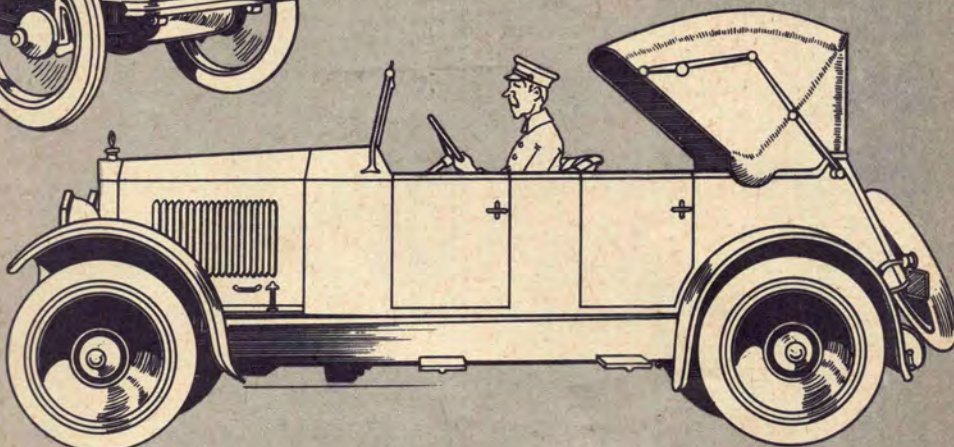
Meandering down Memory Lane for the fourth time we meet up with another batch of names once famous in the automobile world. A few of these—Winton, Locomobile and Paige (Graham)—we have encountered on previous trips, but all the rest shown here are newcomers to the Lane. The impractical-looking Selden buggy has an especial historical

interest to oldtimer fans since its designer, George Selden, managed to wangle all-out patent rights on his design and for years forced the entire auto industry to pay royalties until Henry Ford stepped in with a successful court action. It is estimated that Selden collected not less than \$6,000,000 from the rapidly growing industry before Ford put an end to

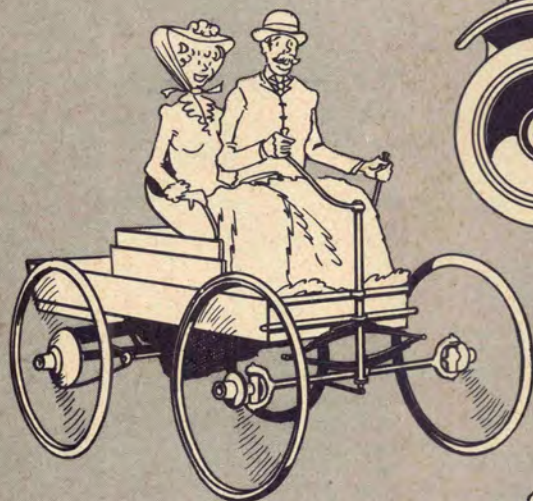


Are "Portholes" something new? Well, hardly! Witness this 1922 model Dixie Flyer which was quite a snazzy job in its day. This model HS-70 shown was powered with a 40 hp. L-head four-cylinder engine and cost \$1,385. Dixies went out in 1924.

Produced from 1908 until 1929, Velie cars were famed for sturdy engines. The Model 28 below had a 40 hp. six-cylinder Continental engine. This luxury job: a moderate \$2,200.

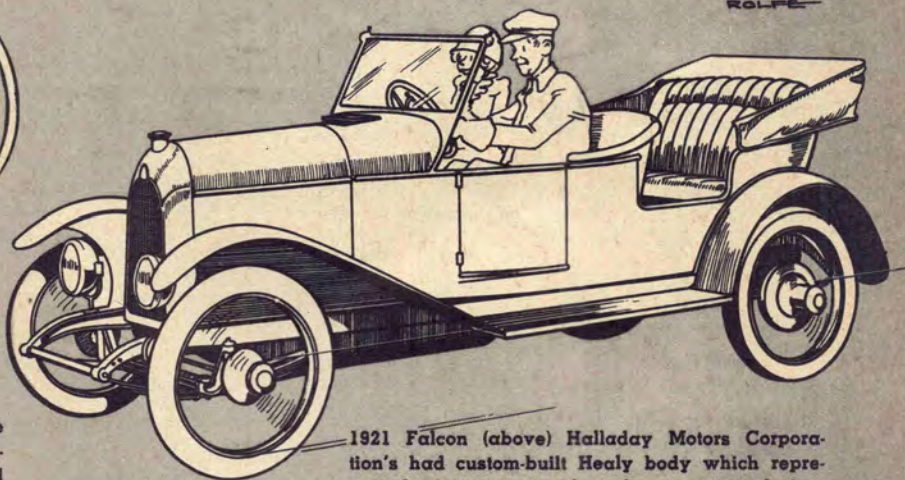


DOUGLAS
ROLFE

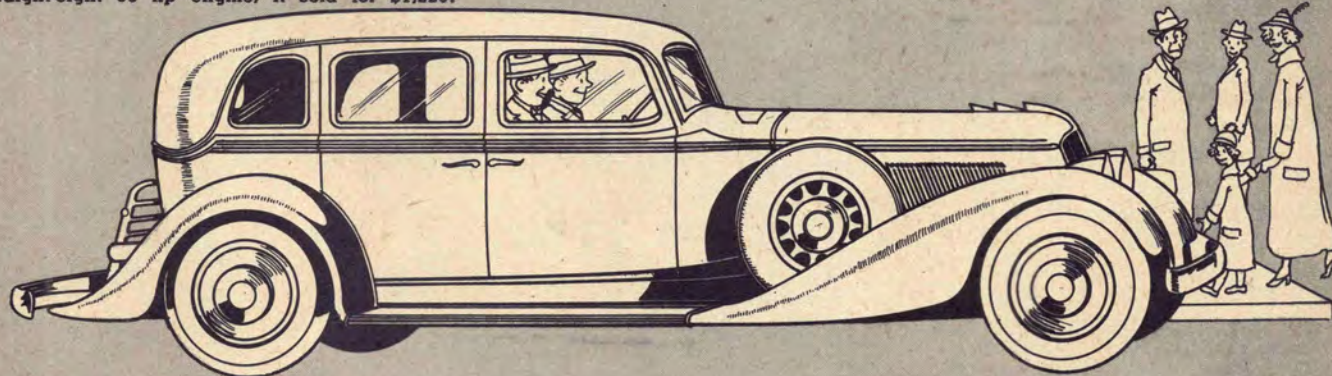


First automobile to ride the streets of Detroit was this curious little powered buggy designed and built by Charles B. King in 1896. (Later Kings were more developed.)

Many a head wagged in disapproval when the now defunct Graham Company (was Graham-Paige, earlier plain Paige) introduced skirted fenders (1932). A big car, 123 inch wheel-base, straight-eight 90 hp engine, it sold for \$1,220!



1921 Falcon (above) Halladay Motors Corporation's had custom-built Healy body which represented contemporary ideas for sport car design. 20 hp. four-cylinder engine, 60 mph.



the arrangement. As usual we have tried to come up with a variety of the makes which once were the pride and joy of their owners. Perhaps the most important car shown on these pages is the 1932 Graham. It was a direct descendant of the earlier Paige which was once advertised as "the most beautiful car in America." Evidently Paige had

something on the ball, for the 1932 Graham introduced entirely different styling and was widely copied by its competitors. This despite the violent objections of many customers who considered the skirted fenders both impractical and ugly. Graham, alas, is no longer in the picture—in part a victim of the intense competition within the industry.

"This is one of my all-time bests," says the designer who has been acclaimed as one of the country's most original men of modeling. No fancy gimmicks here, no frills, just a little easy construction, and then lots of fascinating flying ahead



Tan-Gyro

The Control-Line Gyro-Copter

By ROY L. CLOUGH, JR.

■ You'll stop the show when you put this spectacular rotary-wing job aloft. In flight it looks just like a big tandem rotor helicopter with lines reminiscent of the Piasecki and Bristol machines.

Although the appearance of the model is very close to the double-ended helicopter types it is really more closely related to the gyro-dyne family—rotary wing machines which may rise up vertically, like a helicopter, but which depend upon a propeller for forward motion. In this respect it is somewhat similar to an autogyro.

To avoid mechanical complication our model uses a short ground run instead of vertical take-off. With this system it is not necessary to power the rotors and taking off with forward speed is more practical in a controlled model because it keeps the lines tight.

Okay, it sounds great, but how does it handle? Is it hard to fly? How does it behave in a breeze?

The answers are that this model is actually easier to fly than the average sport job. The control response is very smooth and positive and it stays right

out at the end of 50 foot lines with any good .19, as high as you'd care to fly any non-stunt type model of this weight, and the wind bothers it less than fixed wing models. There is a barely perceptible cyclic slap from the rotors, but, far from being a nuisance, this gives the "feel" of real rotary wing flying. You do not require any particular knowledge of rotary-wing craft to build and fly it successfully.

Begin with the fuselage which consists of two $3/32$ " x 3" x 36" sheet sides cut to shape. The bulkheads are $1/8$ " sheet and the two rotor mast carrying bulkheads should be cut from very hard stock, or else substitute plywood. You will note that the fuselage follows very conventional construction lines for sheet balsa building and requires little or no explanation except at the front end.

This model differs from usual control-liners in that the elevating surfaces are at the front end instead of the tail. Therefore study the control hook-up and be sure you understand it—the elevators are depressed to raise the nose, and lifted up to lower it, just the reverse of





usual. The landing gear arrangement should be followed; if you use a radial mount engine, for example, put in a plywood floor to bolt the landing gear firmly in place. Note the L.G. wire should not be firmly attached to the elevator cross-arm piece, but is held to it by rubber bands which act as shock absorbers. The motor mount depends upon the engine. We used a McCoy Sportsman .19 with rear rotor valving. This is about the top power which should be put in this model—in fact, if you go down to 35-foot lines, a good hot .09 engine might prove quite adequate.

The rotors are very simple to build, but a good touch with a soldering iron is necessary. These rotors are not rigid as they may appear at a glance, but semi-flexible, which takes the cyclic jar and shock out and greatly increases the operating life. We mention this so you will not substitute a heavier wire than specified for the arms, or try to by-pass the soldering job by gluing up a solid wood rotor head. A glued-up rotor head seems simple and easy, and it is, but the catch is that if you equip the model

with rotors like this you can expect cracked blades after the first flight and somewhere along about the third flight you will get an interesting shower of broken balsa as the rotors shatter under cyclic pounding.

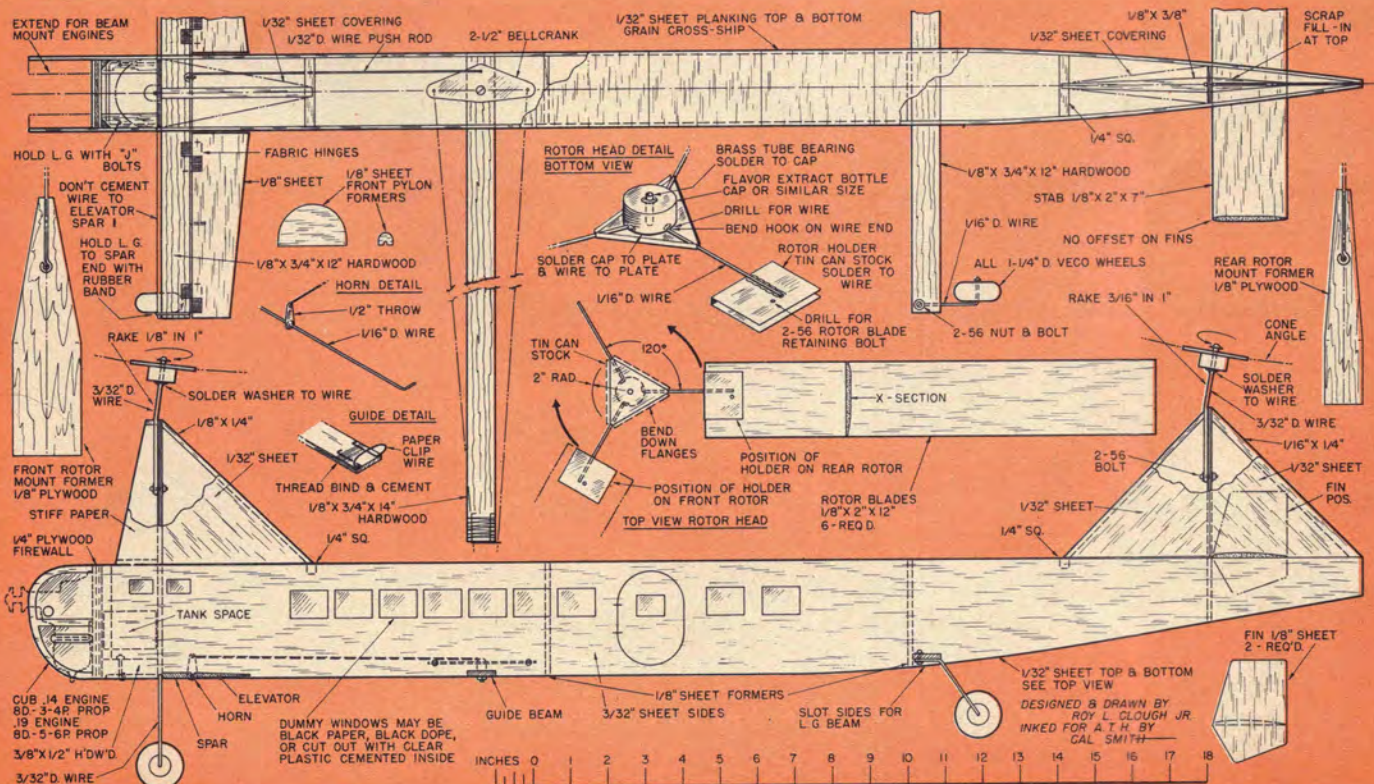
Clean metal and acid-core solder and an iron a bit hotter than necessary will insure a good job. You do not have to use bottle caps of the exact size shown, for anything similar which will fit is okay. Be sure to leave at least one inch of wire between the blade root and the hub for flexing. The cone angle should be as shown; if no cone angle is used the model will not fly well in level flight, but will have to be nosed up, which is sloppy. Be sure the rotor masts tilt at the correct angle; the rear rotor operates at a greater angle of attack than the front to compensate for downwash effects. This will not make the model nose in. When you assemble the rotors to the mast make sure they rotate freely; there should not be any great difference in the ease with which each bearing turns.

Flying the model is not much different than flying any sport job. The four-wheel

gear produces exceptionally good ground stability, but do not neglect the usual down-wind take-off precaution—you have two big rotors here, plus a propeller, and if you flub a stall-off in a strong wind and the model rolls up in the lines it will take five years to untangle.

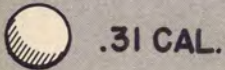
After a couple of normal take-offs under normal conditions you will learn the trick of yanking the nose up immediately after your helper releases the model, and then letting it drop back. This trick sets the rotors spinning very quickly and reduces an otherwise 15-20 feet take-off run by half. Spinning the rotors by hand before releasing the model does not work well and should be avoided. Near the end of the run, when the motor starts to sputter, bring the model down to five or six feet. When the motor dies bring it in gradually.

Full-size plans for the Tan-Giro are part of Group Plan #955 Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (50c).



Cartridges and Calibers

FLINTLOCK & PERCUSSION ERA



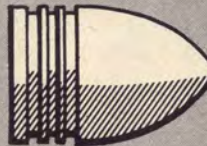
.31 CAL.

.58 CAL.
CIVIL WAR
MUSKET BALL

.36 CAL.

.70 CAL.
BALL
(1795).69 CAL. MUSKET BALL
IN A PAPER CARTRIDGE.

.44 CAL.

.69 CAL.
MINIE BULLET
(CIVIL WAR)

COLT CONICAL BALL

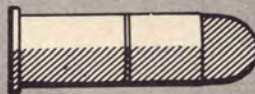
PERCUSSION PISTOL
BULLETS - 1800-1863.THE PAPER CAR-
TRIDGE WAS THE
FORERUNNER OF
MODERN AMMU-
NITION.

ALL CARTRIDGES SHOWN FULL SIZE.

METALLIC CARTRIDGE ERA



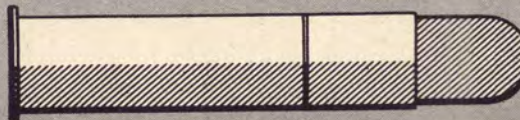
.22 LONG RIFLE



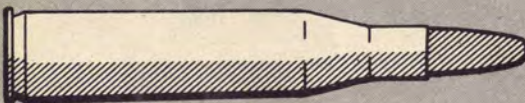
.38 LONG COLT

.44-40 WINCHESTER
1873

.25 AUTO.



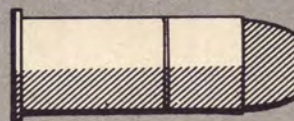
.45-70 GOV'T. - 1874



.257 ROBERTS



.30-06 SPRINGFIELD



.45 COLT-1872



.32 SMITH & WESSON



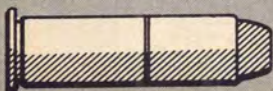
.45 COLT AUTO.



.38 SPECIAL



.44 SMITH & WESSON



.357 MAGNUM

SINCE THOUSANDS OF DIFFER-
ENT CARTRIDGES HAVE BEEN
MADE, ONLY A FEW OF THE
MOST WELL KNOWN AND POP-
ULAR AMERICAN CALIBERS
ARE SHOWN HERE.THE CIRCLES SHOW
SOME CALIBERS
EXACT SIZE.

.22

.25

.30

.32

.357

.38

.45

.50

.58

.70

It took more than 250 years to develop ammunition from lead ball to today's supersonic bullet

■ Before the early 1700s the problem of cartridge design had hardly been touched. There are some records to indicate that during the Revolutionary War, American soldiers were using a lead ball and powder charge wrapped in paper. During these times, however, the shooter generally carried his powder loose in a flask and the lead balls or bullets in a separate bag or container.

Before the Civil War, in the early 1800s, the conical bullet began to replace the round ball and the percussion cap came into use. Many types of cartridges were employed in this period, most of them being envelopes or bags that held the bullet and powder charge in one compact unit. Linen, paper, animal skin and other combustibles were utilized to make these early cartridges. The Minié ball shown in the illustrations was used during the Civil War with great success. This was a conical bullet with a concave depression in its base and was slightly smaller in diameter than the bore of the rifle in which it was used. When the rifle was fired, the hollow base of the bullet expanded to fit the bore tightly. The Minié ball was wrapped in a paper cartridge. To load, the soldiers bit off the tail of the paper cartridge, poured the loose powder into the bore of the rifle and dropped the bullet in after it.

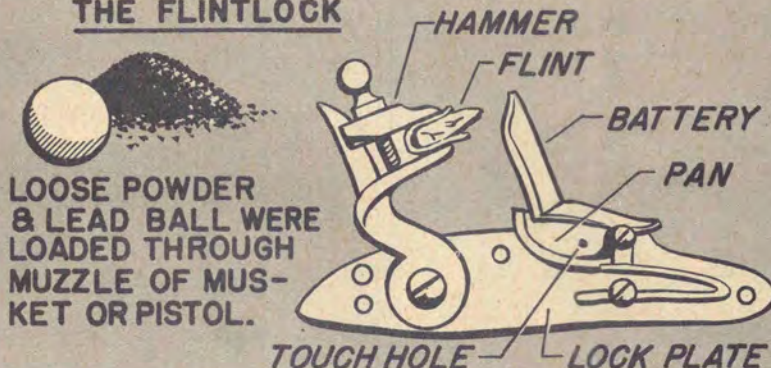
Metallic cartridges were under development as early as 1835, but the first practical use of them was made with the early Henry and Spencer rifles after the Civil War. As the development of the metallic cartridge progressed, the center fire primer came into use. The little .22 caliber cartridge is one of the few remaining rim-fire cartridges in use today. The center fire primer was nothing more than a percussion cap contained in a metal casing which housed a small piece of metal, or anvil, upon which the primer was crushed when the firing pin of the rifle or pistol in which it was used.

These early metallic cartridges were rimmed at the base, but the design of modern automatic weapons allowed the use of the so called rimless cartridge with an extraction groove cut around the base of the casing as shown in the drawing of the .45 automatic cartridge.

Metallic cartridges were at first loaded with the conventional black powder of that day. Black powder, upon firing, would leave large deposits of fouling in the chambers and barrel of a gun, making frequent cleaning necessary. About 1886 smokeless powder was developed in France. This is a combination of nitrocellulose and nitroglycerine. It burned faster and cleaner than the black powder and left very little residue or fouling in the gun. The increased pressures made possible with the use of the new smokeless powder, leading to today's less powder encouraged the development of powerful bullets.

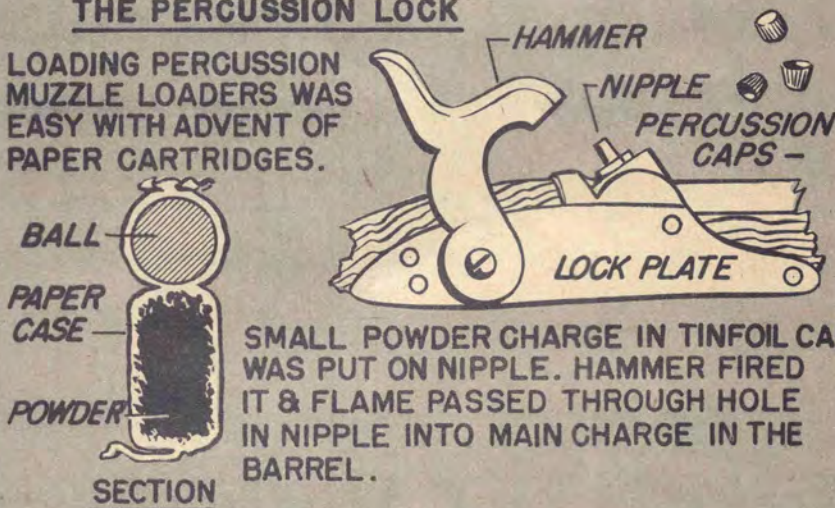
THE DEVELOPMENT OF ARMS SINCE 1700 HAS PARALLELED THE ADVANCE OF CARTRIDGE & BULLET DESIGN. THE PRINCIPAL FORMS OF ARMS DESIGNS OF THIS PERIOD ARE SHOWN HERE.

THE FLINTLOCK

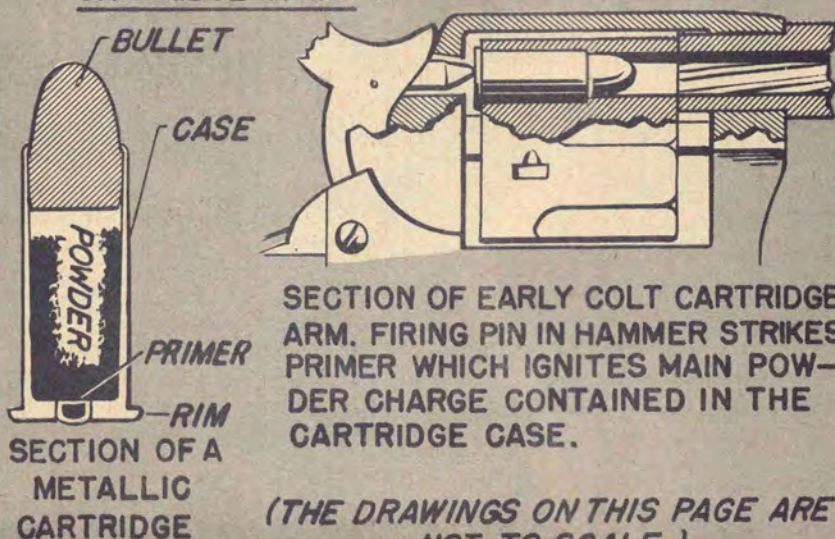


AFTER THE GUN WAS LOADED, A SMALL CHARGE OF POWDER WAS PUT IN THE PAN. SPARKS CAUSED BY FLINT STRIKING BATTERY IGNITED THIS CHARGE AND FLASHED THRU TOUCH HOLE TO LOAD IN BARREL.

THE PERCUSSION LOCK

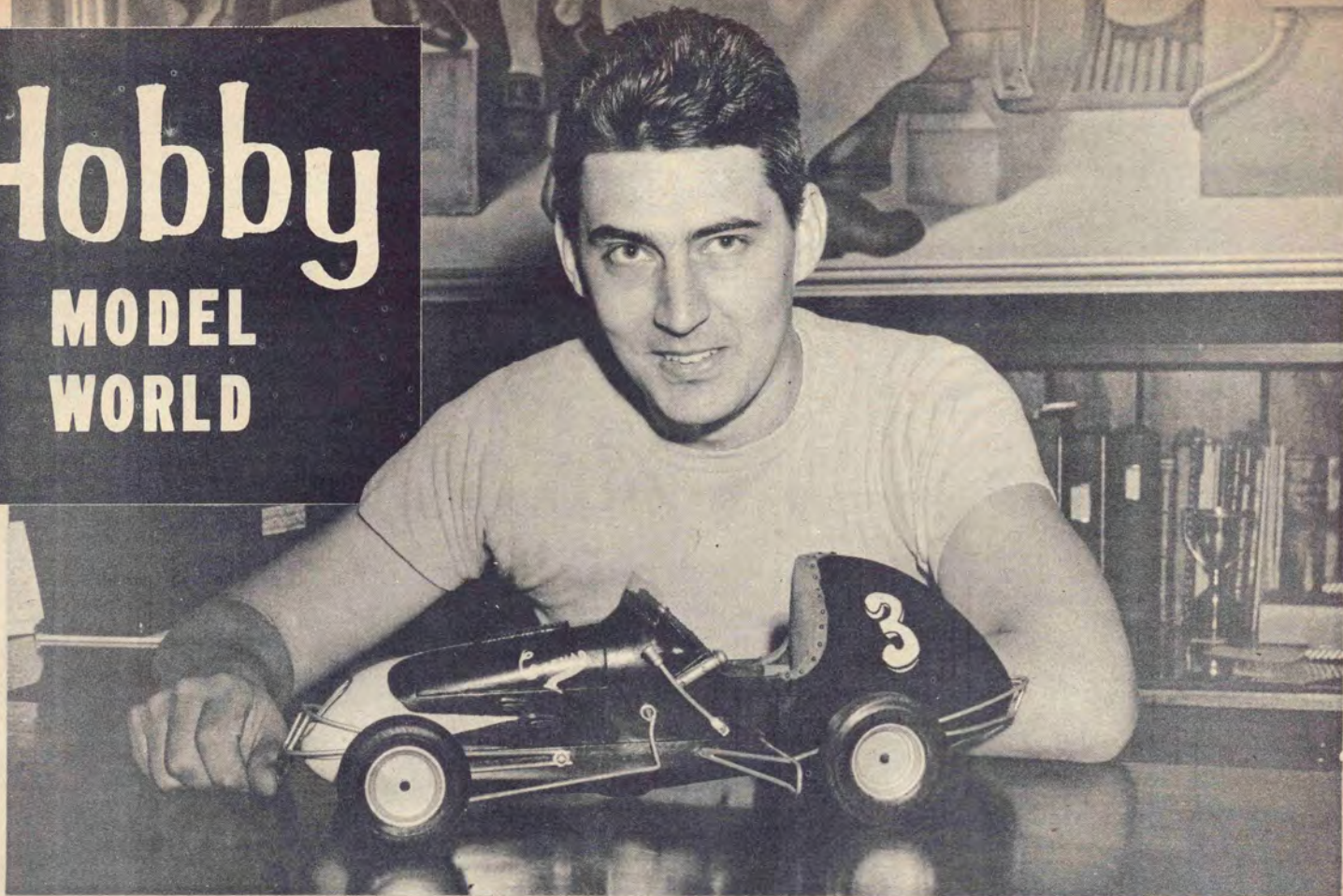


CARTRIDGE ARMS



Hobby

MODEL WORLD



Somebody shut the door — let's get the meeting underway! Here's where all active model plane-boat-car fans gather every month . . .

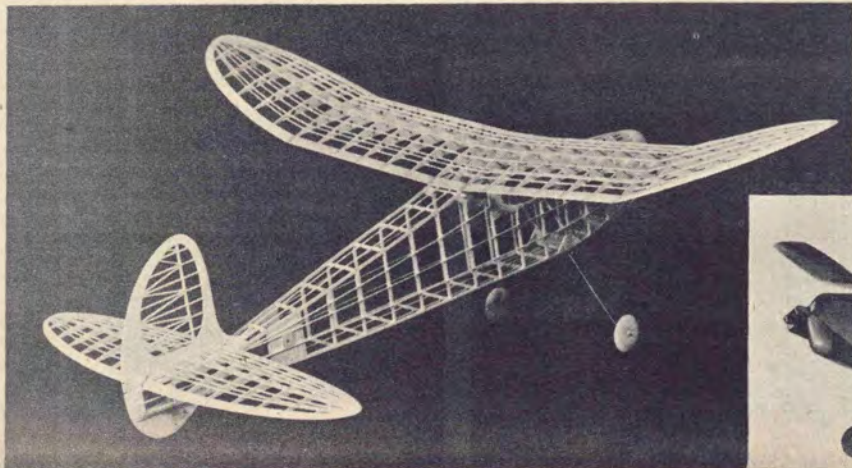
DOPE CAN

■ Junior Chambers of Commerce throughout the country have been invited by the Civil Aeronautics Administration (C.A.A.) to participate in its "Aviation Incentive Movement" by interesting youngsters 7 to 12 years of age in aviation. And how is this going to be done? By starting 'em off right building model planes!

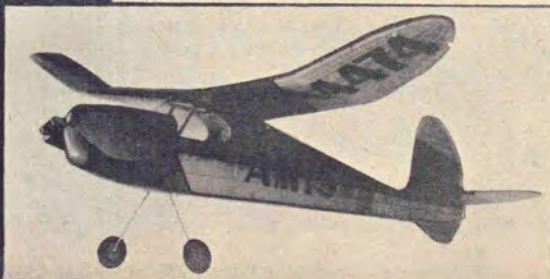
This is about the best news that has hit the model aviation world since you-know-who spanned the Atlantic. Jaycee headquarters at Tulsa, Okla., has mailed to its 2,700 units across the country the request of Frederick B. Lee, Administrator of Civil Aeronautics, that local JCCs undertake promotion of "Phase One" of the A-I-M plan. In this, boys and girls in the 7-12 age bracket (the one in which the Jaycees are most interested) will be encouraged to enter workmanship competitions with simple, solid types of airplane models, and lead

on from that activity into more advanced undertakings in later phases of the plan.

"The A-I-M movement," declared Mr. Lee, "is designed to interest youngsters in aviation pursuits at an early age and to hold that interest through progressively more complex activities until they have reached college age. The CAA, with the approval of the Senate, through SR-272 has been moved to inaugurate this national-local cooperative effort by the slackening of interest in aviation on the part of youngsters in recent years. We recognize the importance of aviation to



Twenty-five years' experience in model plane design went into the Wakefield-type rubber-powered model turned out by James W. Amis of Seattle, Wash. Wingspan is 38"; wing area is 206 sq. in.; model weighs in at 8¼ oz. Skyrockets in right circles, has floating glide to right.



MOST REALISTIC MODEL

Here you have a good idea of what kind of photographs we are looking for in the monthly "Most Realistic Model" competition. Entries should carry complete details on model as well as data on how photo was made including exposure and printing information. This is Peter Kaiser of Grumman Aircraft Engineering Corp., whose replica of a real mid-gel racing car won company award.

YOU CAN WIN \$25!

the nation for development of our civil and economic life and for defense. The decline in interest is unhealthy for a nation which depends more and more upon aeronautical endeavor. We believe this is a comprehensive, constructive program which will build a solid foundation of interested youth in aviation."

While Phase One of A-I-M will involve the younger set, other phases can be started and carried on simultaneously. In Phase Two, young folks between 12 and 16 will continue in air-model competitions involving more intricate flying and non-flying craft. Phase Three, welcoming winners from Phase Two, will involve construction of full-size gliders or power plane kits, and Phase Four envisions the awarding of scholarships for flight and technical training to winners of Phase Three competitions for accomplishment, workmanship, enthusiasm and interest.

A-I-M will also encourage the equipping of aviation laboratories in grade and high schools, where charts and static and working displays of aircraft, aircraft accessories and electronic devices will be available for instruction and use.

Various civic organizations similar to the Jaycees will be asked to participate in A-I-M. The success of the whole movement will depend upon this local cooperation, and it can originate in communities of any size. Sponsors can encourage participants in whatever way they think best suited to local interests, but the CAA suggests that if model plane competitions can be made paramount in the program, it would insure continued interest.

Details of the A-I-M plan are available from the Civil Aeronautics Administration in Washington. Write to W. R. Wright, Director, General Aviation Staff, CAA, Washington 25, D. C.

Model-Minded Folk Dominate N.A.A. It's amazing to discover how high model aviation must stand with the National Aeronautic Association these days. Considering that NAA is the governing body for sporting (non-government) aviation this fact is particularly significant. A run-down of the names of NAA big-wigs (officers and members of the Board of Directors) shows us that at least 18 individuals can be counted on to back any air-model program that might involve NAA, CAA (see foregoing) or AMA.

For instance, NAA's president is Tom Lanphier of Convair; he was instrumental in getting his company to sponsor the '54 F.A.I. free flight gas-Wake-



To eliminate damage from crash landings, James V. Reed whose "Eliminator" radio control model plane design appeared in our July issue, "canned" Walt Good's 3-

tube receiver by rebuilding it in circular form, bottling it up in sponge rubber and fiberglass containers; unit mounts at angle with sensitive relay on the top of it.

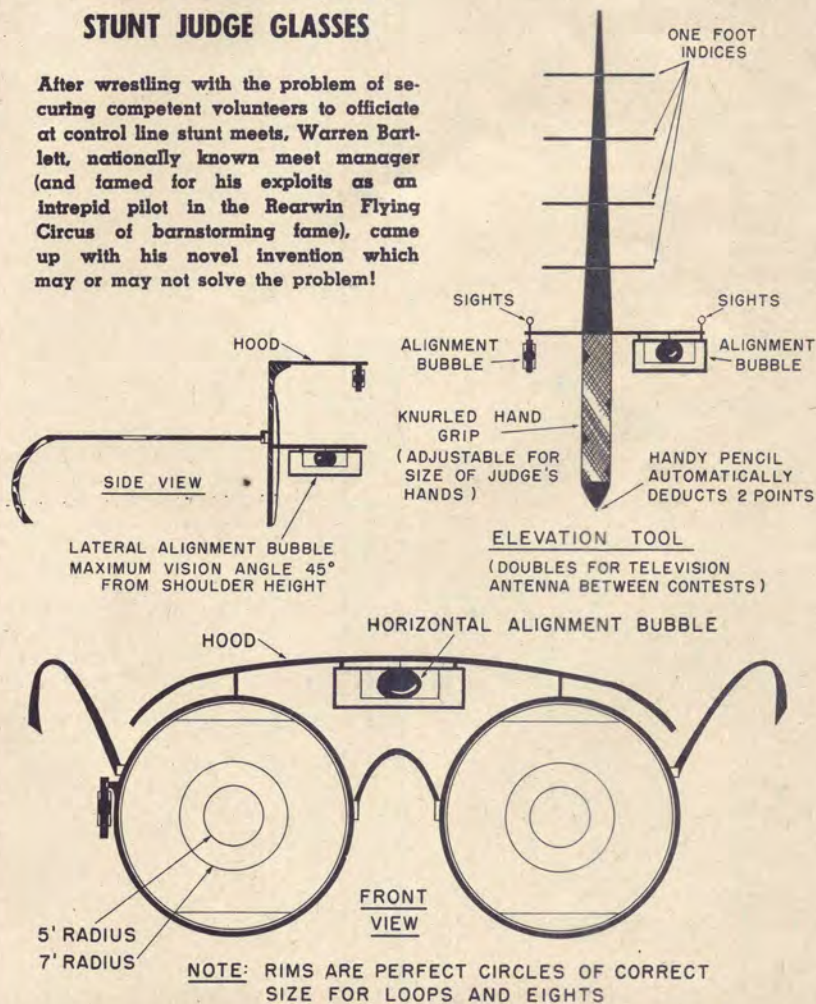
field rubber international competitions. First vice president is Miss Jacqueline Cochran who understands the importance of air-modeling. Then come other vice presidents like Willis Brown of the U. S. Office of Education (first AMA president); Roger Wolfe Kahn (Grumman's service chief and FAI official); Jennings Randolph (who as a Congressman supported model aviation); and John Victory, secretary of NACA (who prevailed

upon the Civil Service people to hire model plane builders at Langley Field).

NAA secretary is Mrs. M. T. (Arlene) Davis, who has attended many model meets; treasurer is Edward Sweeney, formerly head of NAA's Air Youth division; secretary is Charles Logsdon, a firm supporter for years of aeromodeling. On the Board we find such eminent leaders as Maj. Gen. Lucas Beau of CAP; William Enyart, the first to encourage the AMA

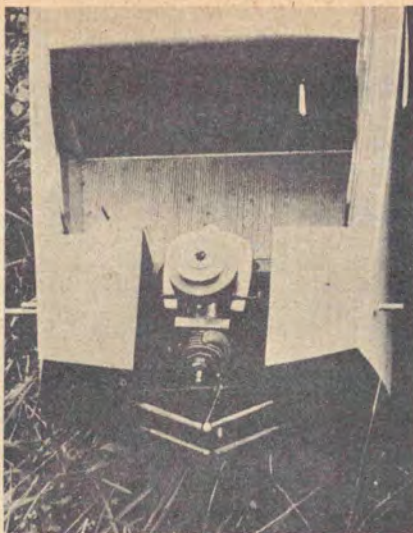
NOTED MODELER PERFECTS STUNT JUDGE GLASSES

After wrestling with the problem of securing competent volunteers to officiate at control line stunt meets, Warren Bartlett, nationally known meet manager (and famed for his exploits as an intrepid pilot in the Rearwin Flying Circus of barnstorming fame), came up with his novel invention which may or may not solve the problem!





Floyd Sims of Richmond, Va., with original radio controlled Sea Fury outboard. With two fuel tanks, each 2½ oz., boat runs 1 hour, 15 minutes. Tiller on rudder actuated by clockwork



escapement. Using 1" Sterling Nylon prop. Floyd rigged cooling tube which picks up water just ahead of prop, delivers stream over fins.



to stand up on its own feet; Evan Evans, executive director of the National Aviation Education Council; Paul Garber of the National Air Museum who wrote one of the first books on air-modeling; George Gardner, the PAA-Load promoter; "Casey" Jones — everybody in aviation knows him; E. J. Reeves, Soaring Society leader; Keith Storey, AMA president—and on and on.

To model leaders in the AMA we say—to get the most for model aviation and the Academy, strike while the iron is hot (or should we say while the NAA Board is loaded with pro-model people!).

That's What She Said. We called Dallas Sherman the other day; wanted to chat about some ideas he had concerning PAA-Load. But Mr. Sherman wasn't in. Said some secretary; "I'm sorry Mr. Sherman isn't here this afternoon; he's in Hong Kong."

Films, Films, Films. For club members

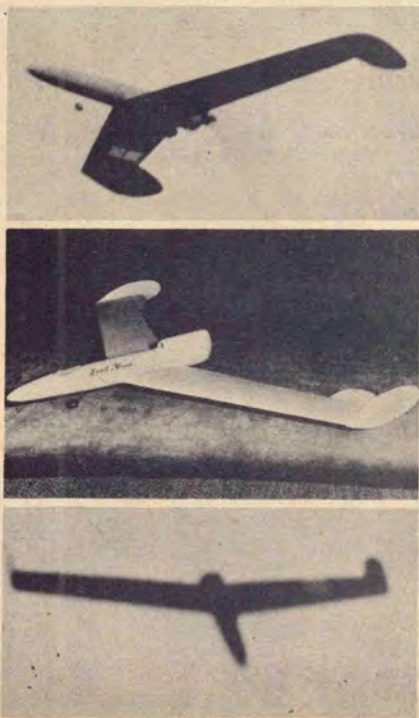
always on the lookout for new and interesting motion pictures for session showings, here are a few tips. General Electric has one called "The Jet Story" which covers jet propulsion. Sikorsky Aircraft and Sabena Belgian Airlines show the first international passenger helicopter service in "The Helicopter Goes to Town." Capital Airlines introduces its new propeller turbine Viscount plane in "A New Concept in Flight."

Boat enthusiasts will want to get a copy of the 1955 edition of "Boating Films" which can be obtained free of charge from the National Association of Engine and Boat Manufacturers, 420 Lexington Ave., New York 17, N. Y. This 28-page catalog of films on recreational boating lists 135 movies categorized into 11 chapters: NAEBM "Water World" series; boat construction; cruising and camping; fishing; motor boat racing; navigation; safety and maintenance; sailing; technical; water sports and weather. Man, that ought to keep the club busy

for awhile!

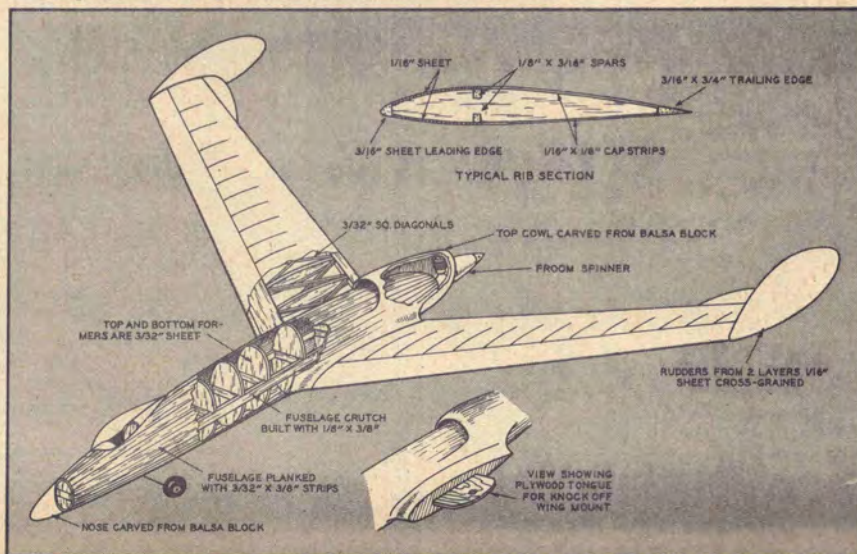
Methods of obtaining boat films are outlined in each listing. All are 16mm size and are available free of charge for return postage unless otherwise indicated. Some are with sound; many are in color.

Hobby Items in the News. We lead off with an S.O.S. from Keith Storey, sales engineer for McCoy Products. Wails Keith: "We did it again! We goofed. Our McCoy Super Stunt '36' literature still has a mistake. The design displacement of the '36' is .345 cubic inches, not .354 as listed. The actual displacement working close to the top tolerances is .348 cubic inches. We would appreciate your mentioning this fact to the numerous modelers who are interested in the combat flying event. The new AMA rules limit combat to a maximum of .350 cubic inches and our correspondence to date indicates this correct information would be valuable to contest directors and modelers alike."



Eight years' work with all types of flying wing and tailless craft preceded Arden .099 free flight "Devil Moon"; designer is Bud Johnson, Rosemead, Calif. Span 54"; stall characteristics excellent; knock-off wing panels and rugged construction make plane virtually indestructible. Re-

ports Bud: "It has survived many violent encounters with fences, automobiles, and assorted small children . . . I am interested . . . in this type of modeling, and feel that modelers should attempt to keep abreast of, if not ahead of, development in the full scale craft."



Okay, Keith—there you are.

In the big Pacific Northwest Regional model airplane radio control contest, Charles Hollinger captured first place in the multi-channel event flying his famous Babcock BCR-3 equipped, motor controlled scale model Cub (which was detailed in ATH). Also in the single channel radio control event, Jim Lackey took first place with his Babcock BCR-3 equipped plane.

New model at Sterling! Yup, but it's a one-of-a-kind deal, not available in kit form. Pete Timchal, one of the leading lights for Sterling Models, is passing out the balsawood cigars in honor of his first offspring, Marie Frances.

Finest hobby shop postcard we've ever seen is a full-color job showing Rich's Hobbytowne which is on U. S. Route 46 in Parsippany, N. J., not far from the famous George Washington bridge over the Hudson. Which leads us into suggesting that if you're ever in the vicinity on a summer Sunday afternoon you ought to stop by and see the model-plane flying show that goes on under the direction of proprietor Richard H. Palmer. A grandstand has been erected and a large parking field accommodates a good number of cars. At press time the big attraction was to be Dale Kirm demonstrating Mono-Line flying to any unbelievers that may have been missed in the New York City area. Rich's next project is a model boat pond.

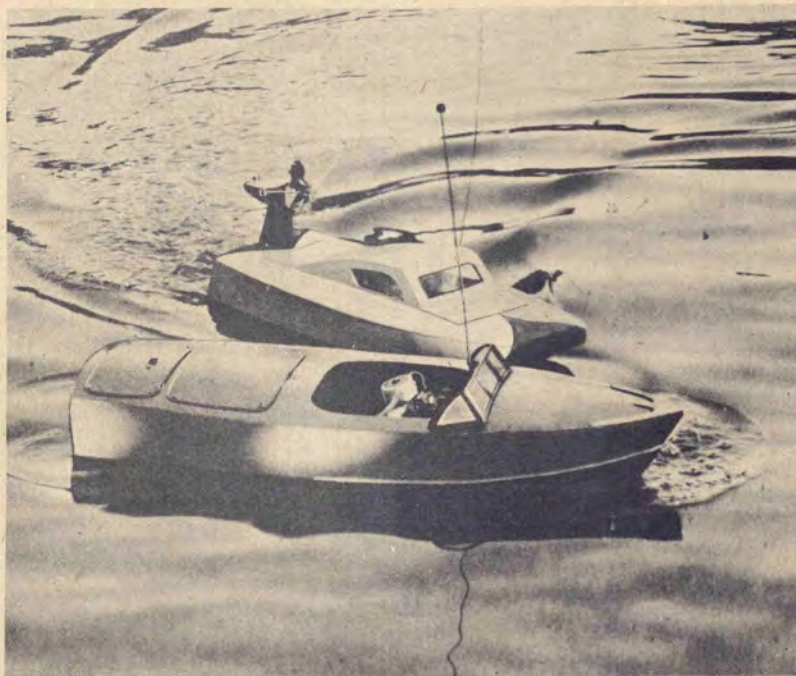
The Rail Dope. Can't complain that we don't keep you up to date on organizations, contests, and modeling activities in general. In answer to a lot of requests we ran down data on the NMRA—the National Model Railroad Association. Very interesting organization it turned out to be, too. Does pretty much for the model railers what the AMA does for model planes, the AMRCA for model cars and the IMPBA for model boats.

The NMRA is an international organization of hobbyists interested in all phases of model railroading. Organized in 1935 to compile and recommend wheel and track dimensions, the association has grown tremendously since then and has sponsored an ever widening program of service to further interest in model railroading and to foster cooperation and fellowship among "model rails" everywhere. It's an independent amateur society which cooperates with the commercial interests but is not controlled by them.

NMRA "standards" were established through the painstaking study and

Tops in Grumman Engineering's hobby contest for employees was Douglas Martin (named after two plane makers?) whose 77½" Ford Tri-Motor took first in model plane classification.

Hobbies in Action—\$25 Award Winner



As described in the August "Model Boating" column, here is Robert A. Keeton's Sea Scooter (with .099 Cub) serving as a retrieving boat at Richmond Va., meet. Bob calls his S.S. the "Glo-Mo-Shun"! When submitting entries to this contest be sure to include full data on models as well as complete photographic details.

lengthly experience of members of the association. These model RR specifications and dimensions were developed in cooperation with manufacturers of model railroad equipment and are designed to permit reliable operation, scale appearance as far as practical, and for interchangeability of parts, rolling stock and track. Nearly all U. S. model railroad equipment is made to conform closely to these "standards." Through the work of various committees the program of standardization is constantly being refined, improved and extended.

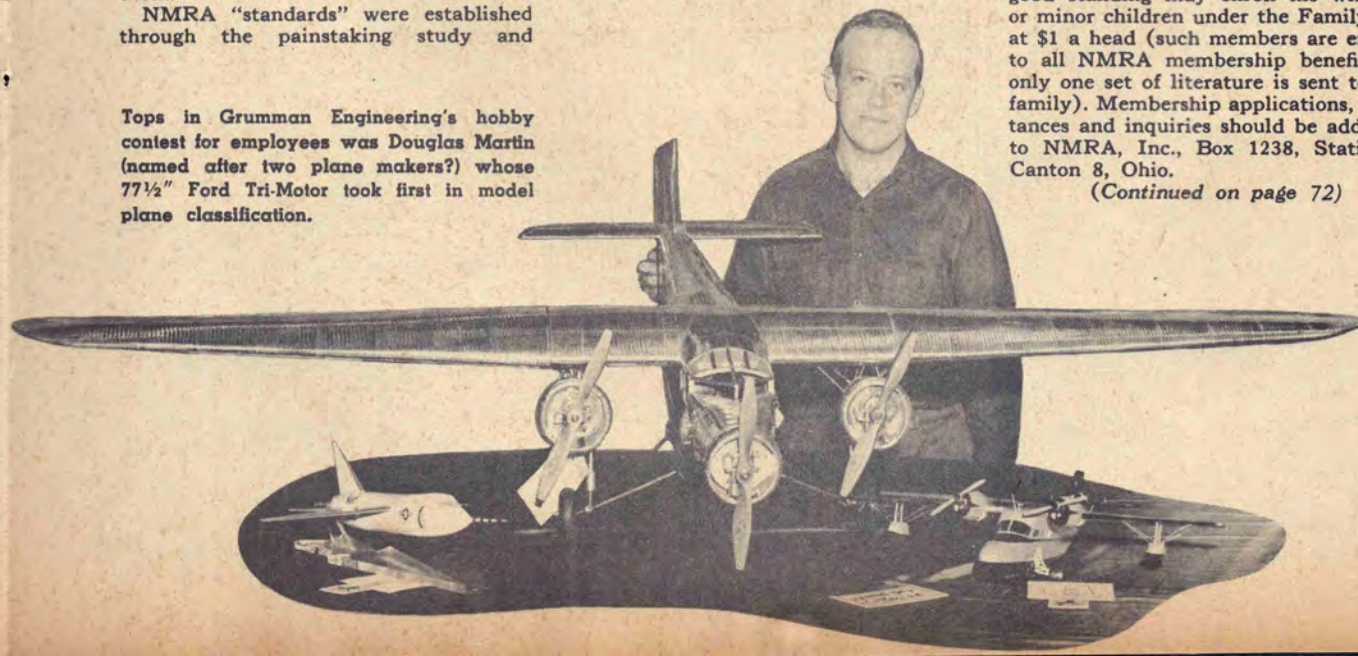
Most of the model railroad clubs in the United States, Canada, and Great Britain are actively supporting the

NMRA and many of them have 100% individual membership. A large portion of members, however, comes from the vast number of "unaffiliated" model railroaders. So the association is truly representative of the combined interests of all model rail fans.

On or near the Labor Day weekend, the NMRA holds its annual convention. This affair draws visitors from all sections. NMRA regional meetings are usually held twice a year so model railroaders can get together, become acquainted and talk about miniature RR'ing just like boat, car and planes fans do about their hobby.

Regular membership dues in the NMRA are \$3 per year. A member in good standing may enroll his wife and or minor children under the Family Plan at \$1 a head (such members are entitled to all NMRA membership benefits but only one set of literature is sent to each family). Membership applications, remittances and inquiries should be addressed to NMRA, Inc., Box 1238, Station C, Canton 8, Ohio.

(Continued on page 72)



Radio Controlled



Landing Craft

By WALTER A. MUSCIANO



►► Last issue in the opening installment, the author told us about postwar LCU's and LCT's. Herewith instructions for building a model R/C LCU (reduced-size plans appeared in the August issue).

To start construction cut hull bottom and Main Deck from $\frac{1}{8}$ " sheet balsa. Butt cemented sheets so grain runs beamwise for ease of assembly and added strength. These should be joined during, not before assembly. Cut hull sides and bulkheads from $\frac{1}{8}$ " sheet. Hull sides run along Main Deck, then slope up to Poop Deck at after end of craft; grain of hull sides runs vertically near bow and stern. Cement bulkheads to sides using plenty of adhesive. Hold together with straight pins until cement is thoroughly dry. Cut transom to shape; cement to end of hull sides. Pull hull sides together to meet transom. Cement well holding sides to transom using straight pins as clamps. Follow with Main Deck and hull bottom. When covering bottom cut three troughs in

bottom at stern to form tunnels for propellers. These tunnels are made from $\frac{1}{8}$ " sheet balsa and added last. When covering hull top and bottom start at bow and work aft cementing sheets to each other as well as to hull sides. Use plenty of cement of slower drying variety.

Propeller troughs are cut from $\frac{1}{8}$ " sheet bottom section that has been pre-assembled or butt joined (note grain direction). After this has been assembled cut top covering of trough to shape; bend gently while cementing in place. Curve it as plans show. After this has dried add sides of troughs. It is advisable to cut these about $\frac{1}{4}$ " oversize all around. Trim when dry.

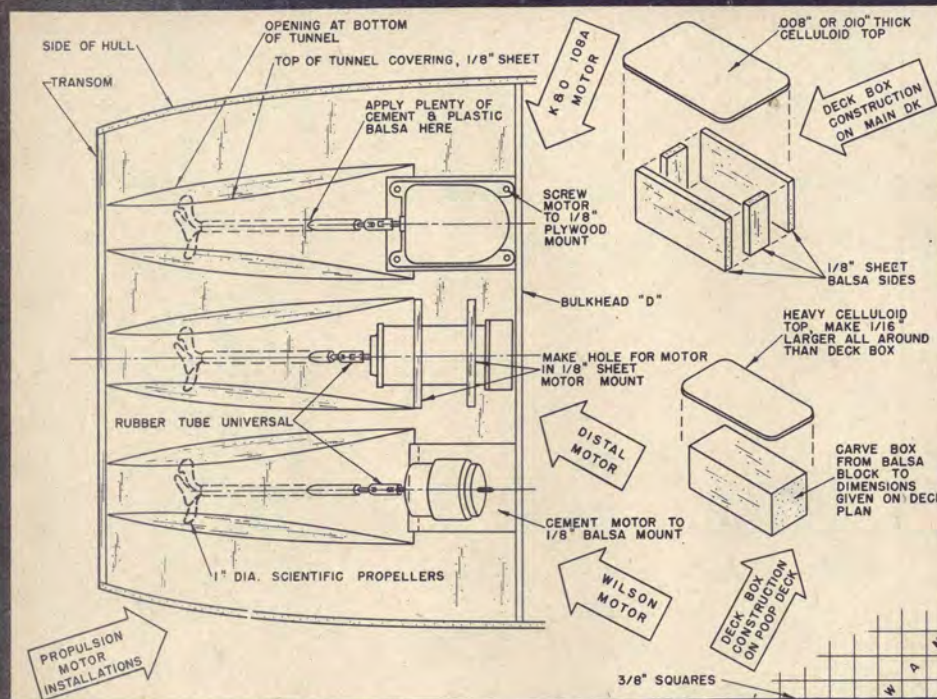
To provide access to motors, rudder servo and receiver we made entire Poop Deck removable. Butt-join sheet balsa to form correct size for deck. Trace deck outline onto assembled sheet; cut to shape with single edge razor blade. Cut $\frac{1}{8}$ " sheet into $\frac{1}{4}$ " wide strips; cement these to underside of poop deck to pre-

vent it from twisting or bending. This reinforcing is located $\frac{1}{8}$ " from edge of deck to make poop deck fit hull very snugly. Cut wheel house sides, top, front and rear from $\frac{1}{8}$ " sheet; assemble to form a box. When complete and dry wheel house is cemented to Poop Deck only—not to Main Deck or bulkhead "D". Thus wheel house will be removable as a unit with Poop Deck.

Carefully trim hull covering edges flush with sides. Using fine sandpaper wrapped around 1" x 3" x 4" wood block sand sides, bottom and decks until smooth. Do not round off any corners except on wheel house. Brush heavy coats of Sanding Sealer onto entire hull. When dry sand hull smooth with very fine sandpaper. Apply 2 more coats of Sanding Sealer; sand again.

At this time decide what equipment is to be installed (we shall assume you desire to duplicate the prototype model and continue on that basis.) Cement balsa propelling motor mounts to hull bottom; cement motors to them. While





this is drying pierce hull bottom and slip prop shaft housings through hull. Cement well; add Plastic Wood fillets to interior side of these joints to hold shaft housings firmly in place. Cut these to proper length before installing. Firmly attach propellers to shafts using nuts supplied with Scientific Marine Unit. Solder seal propellers to shafts. Cut shaft to proper length, slide it through housing. Install rubber or plastic tubing universal joints to motor and shafts to complete propelling machinery.

All batteries, power and radio are located under Main Deck. This necessitates a deck hatch. Size of opening is determined by number of batteries carried. Use sharp razor blade and straight edge when cutting hatch. Remove it carefully and reinforce hatch bottom as was done on Poop Deck. Using scrap 1/8 inch sheet balsa construct boxes for various batteries to keep them from shifting. Connect motor wiring through switch, check operation. Be sure all motors rotate in same direction.

Ramp motor, gears and battery should be installed now; the fine chain is firmly attached to reel on gear. Pass chain through Main Deck into which a grommet is inserted; make chain long enough.

Foc'sle Deck and pieces F-1 & F-2 are cut to shape following patterns. First, cement F-1 and F-2 to Foc'sle Deck. Hold in place with pins until dry. Mark location of F-1 and F-2 on Main Deck then cement these to deck. Be certain F-1 and F-2 are perpendicular to Main Deck. Hold in position with straight pins until dry. Insert grommet through the Foc'sle Deck to receive ramp chain. After chain has been passed through grommet cover remaining portion between Main and Foc'sle Decks. Cut soft 1/8 inch sheet balsa to pattern shown. Cut these sides apart, where shown, to facilitate assembly. Cement these sections to Main and Foc'sle Decks and to each other. Use plenty of slow-drying cement.

When dry sand entire hull thoroughly with fine sandpaper. Apply two more coats of Sanding Sealer, sand again. Cut

bulwark from sheet balsa, sand it smooth. Apply liberal quantity of Sanding Sealer to both sides of bulwark to keep it from bending out of shape. When dry, sand smooth, add more Sealer. Sand again. Cement bulwark to main deck.

Gun emplacement splinter shields are now installed. Cut these from heavy celluloid; cement in place to Poop Deck. Cut bulwark topping from dowel, sand well, apply Sanding Sealer liberally. Sand again; cement firmly atop bulwark.

Thin sanding sealer about 20% lacquer thinner and apply 4 coats over entire model. Sand this very gently with 8/0 finishing sandpaper. By this time the hull should have a glass-smooth finish. If not, add more thinned sanding sealer.

The triple rudders are added. Cut these from sheet brass, copper or tin can metal (do not use aluminum). File rudders to smooth, streamline shape and solder to rudder posts (use plenty of solder). File away excess solder. Cut copper, brass or aluminum tube rudder post sleeves to length. Make three holes in hull bottom to receive tubes. Cut sleeve braces; cement them to sleeves, wrap with thread. When dry cement this assembly to hull bottom and transom interior. Apply plenty of cement to these joints. Slip rudder posts into sleeves; bend upper portion to form tiller on each post. Bend down again to receive tie rod. Tie rod is cut from sheet metal; drill holes as shown. Slip this onto tillers. Solder a washer to tiller above and below tie-rod to hold it in place without binding.

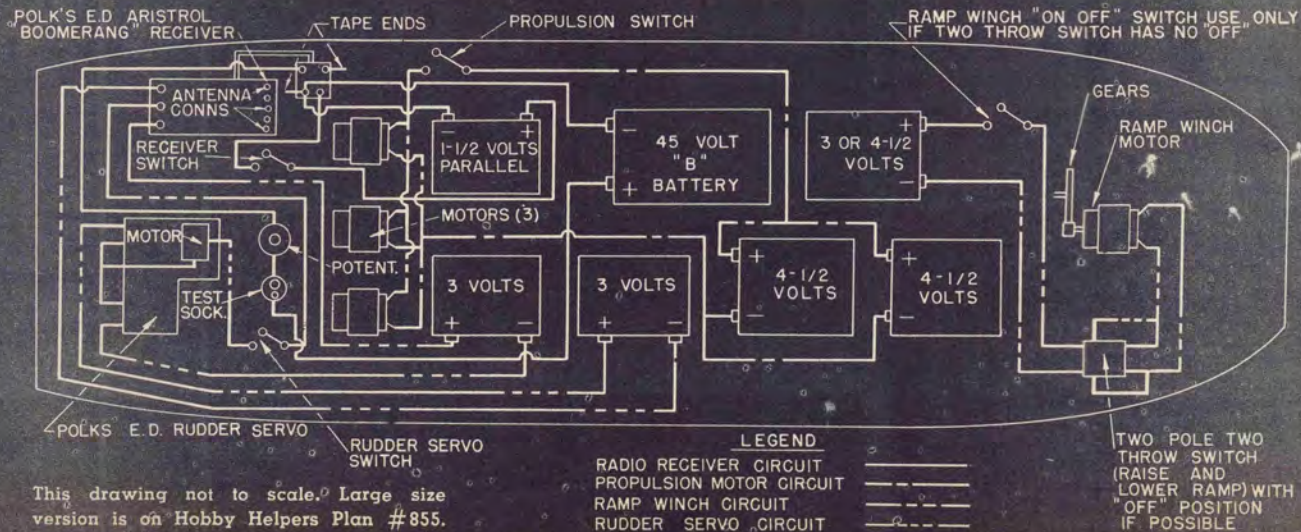
In order to protect propellers during beach landings, Landing Craft utilizes skids on hull bottom. These can be added to your model at this time. Bend skids from wire coat hanger (first remove paint with fine sandpaper). Solder components together on each skid before attaching to hull. Make skids extra 1/4 inch longer in order to insert ends through hull bottom and firmly anchor with plenty of cement.

Construct platform mount for E. D. Rudder Servo and cement to hull. Screw Servo to platform; slip traveller into slot in tie rod.

Construct box for radio receiver; cement it onto bulkhead as shown. Line box with foam rubber. Connect all wiring for radio and servo. Mount potentiometer, meter test socket and switches onto balsa or plywood panel; cement this in place.

The ramp is now made. If a movable ramp is desired add a bit of lead weight to forward end so ramp will respond quickly when opened. Made from two

(Continued on page 69)



This drawing not to scale. Large size version is on Hobby Helpers Plan #855.

**Fly with the fuel that
helped set the still unbroken
world's model plane endurance
flight record* of
8 hours, 31 minutes, 50 seconds....**

***Set by Sherman Holt
Fayetteville, N. C.
September, 1953**

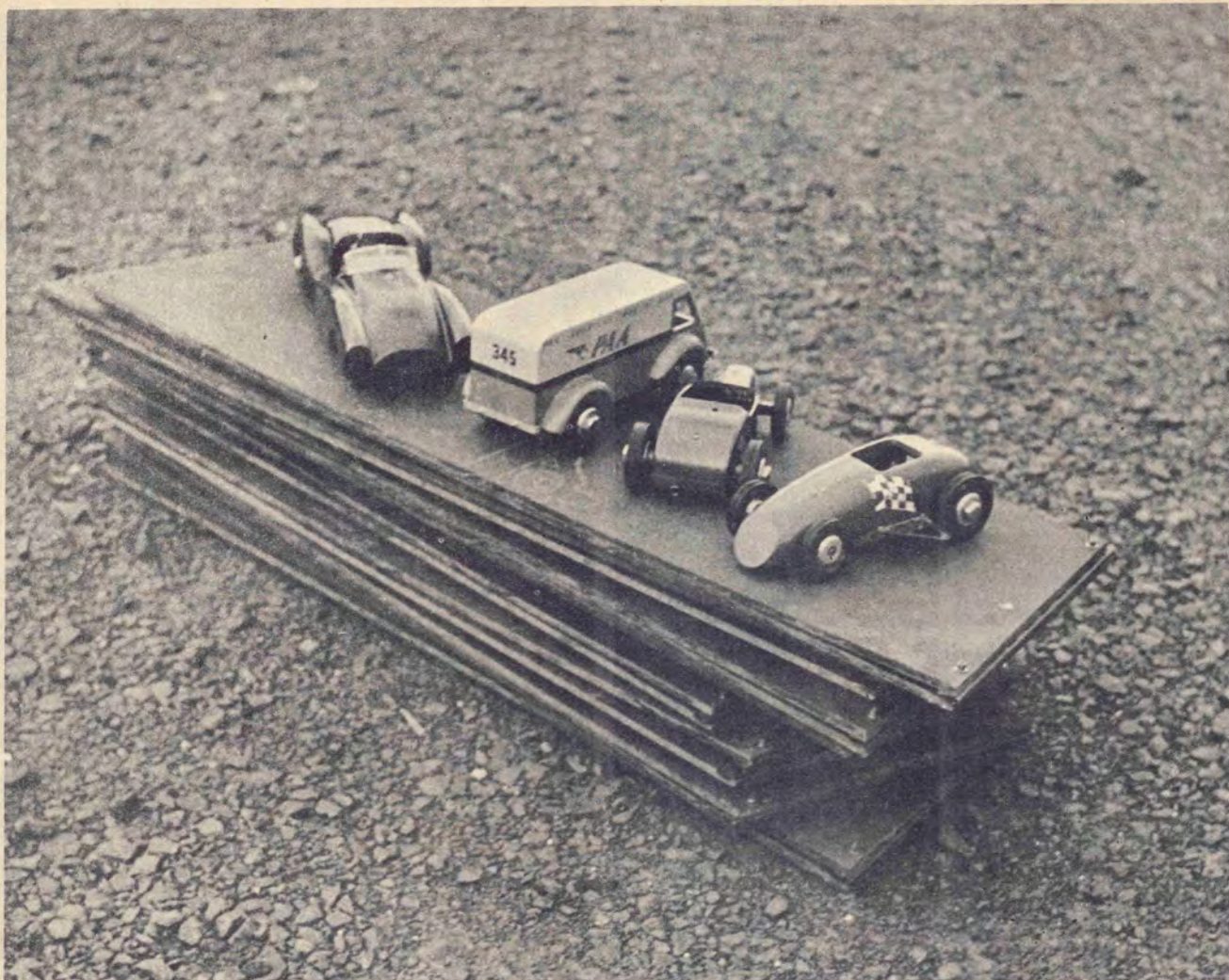
TESTORS

"39"

CAUTION
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MIXTURE
DO NOT USE
NEAR FIRE
OR FLAME
N.T.C. C/A 972

**THE PERFECT AVIATION FUEL
FOR *All* MODEL ENGINES**

A Product of
TESTOR CHEMICAL COMPANY
ROCKFORD, ILLINOIS



Build Your Own "Backyard" Race Car Track

By FRANK EHLLING

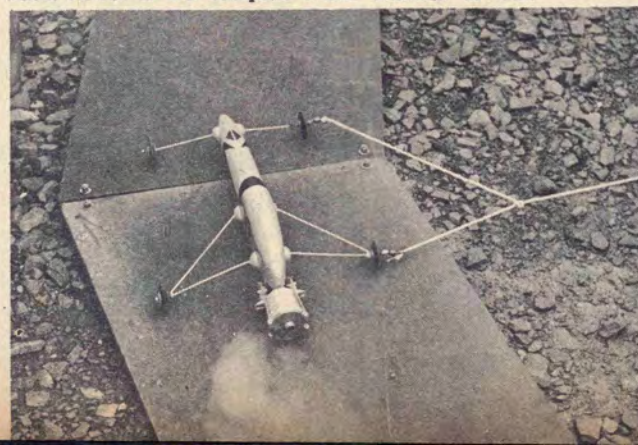
■ If you're a hermit living in some secluded retreat, or if you are surrounded by tolerant neighbors maybe you could install a permanent race car track in your backyard. But for those who must race in non-residential areas, here's the perfect answer to Half-A operations: a portable "doughnut" of Masonite (tempered "Presdwood"—rough side up) that you can pack around from place to place. With it you can run off races in an asphalt parking lot, in a garage or (as the pictures show here) at a friendly used car dealer's lot (yes, Dorothy, there are such critters!).

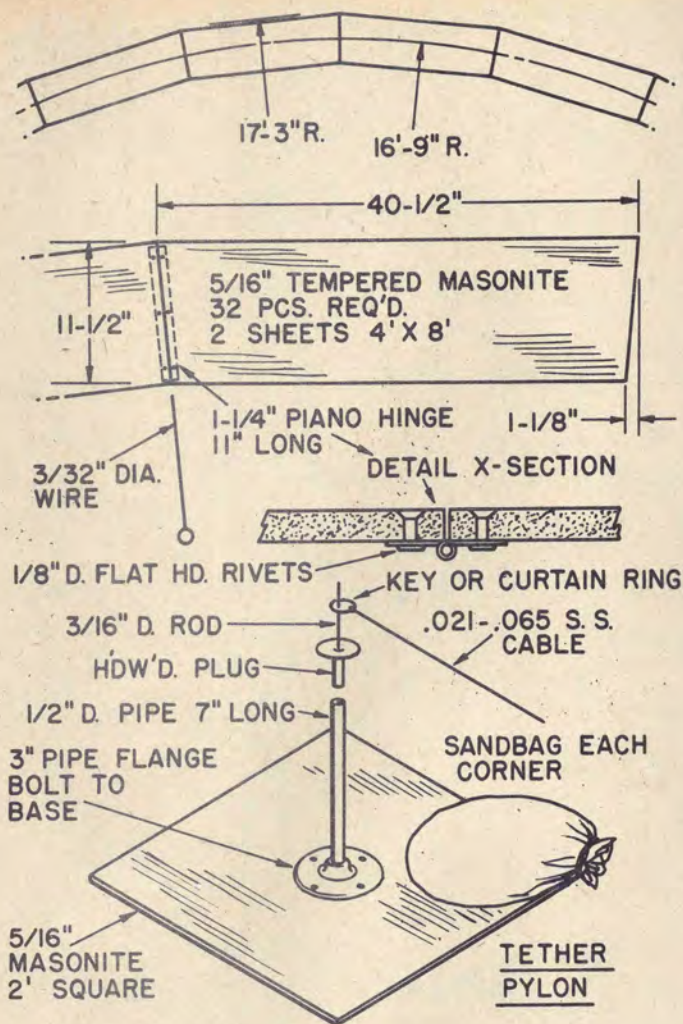
Where owner's permission permits you can drive a pylon pipe into the ground. Otherwise, the center post arrangement shown will suffice for the small-size cars. In any case, race behind a permanent fence, or erect a temporary fence of sufficient strength to prevent injury in case of a snapped tether line. Photos show first test track before counter-sunk flat head rivets were substituted for temporary nuts and bolts which hold hinges.



Assembling track is but a few minutes work; bigger job is selecting with care the right plot to obtain smooth running.

Here's "Jet-Joe" tethered up for a test run on the portable track. Power is the Scorpion which attaches at rear.





Discussion here centers around proper bridling technique for Cameron-powered original sports car (design to appear soon).

And (below) away he goes! This is great stuff for bringing down the waistline. Pusher stick is rubber-tipped aluminum.



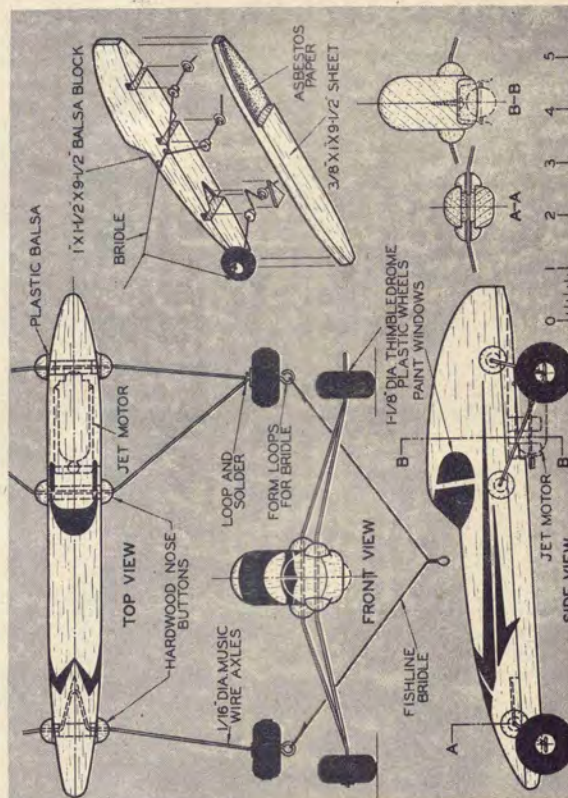
HERE'S "JET-JOE" FOR THOSE YOUNGER CAR-MINDED BROTHERS

■ Designed especially for the young racing fans in your family, the body and chassis of this simple speedster consist of just two pieces of balsa. Since the wheels and axles flex quite a bit in operation, and also may be bent by hand to make the model "track" correctly, it is wise to use hardwood nose buttons to secure the axle ends, as the plans show.

Put plenty of cement on the axle fastenings so that you can bend the wire to suit without having 'things come "unstuck." The asbestos paper shown comes with the Jetex motor; it was moistened and molded to the curvature of the engine section, and when dry was fastened with rubber cement. The Jetex 50 motor was used in the model shown but it will handle anything from the smallest such unit up to the potent Jetmaster; for the latter you will need a deeper hollow in the fuselage, though, to accommodate the unit and clear the ground.

The speedster may be operated on a tether, with the bridle attached to the axle ends, as the plans show. However, it's lots more fun to run it free, if you have

(Continued on page 86)



Full-size plans for "Jet-Joe" are part of Group Plan #955A from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (35c)



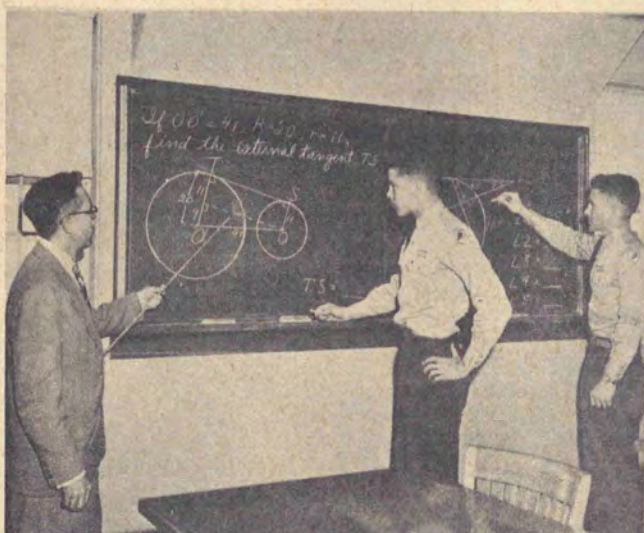
"Little West Point"

Its official name is the United States Military Academy Preparatory School, located at Stewart Air Force Base at Newburgh, N. Y., and its worthy purpose is to prepare servicemen to pass the annual entrance examinations for "big" West Point. Eligible to enter are those members of the regular Army, Navy, Air Force, Marine Corps or Coast Guard who have been appointed to compete for the 90 cadetships usually available to men in the Armed Forces every year, and who have met certain physical and mental requirements for attendance. Curriculum not only aims to fit candidates to make the grade on those all-important exams, but in part to help prepare them for military and academic life at the Point . . . It's a highly competitive deal all around, with many calling and few being chosen, but servicemen at USMA Prep School work hard and with pride to join that Long Gray Line.





The company marches off to class—which may be an intensive one in mathematics or English—military or physical training.



If you were ever weak in geometry, now is the time to let the instructor come to your aid. "Little West Point" founded in 1946.



Major Moses, Commandant, inspects students' room. The school is under the direct command of the Superintendent at the Academy.



You find little "gossiping off" here—including the mandatory two-hour study period every night. The whole idea is to make good.

ANOTHER SCIENTIFIC FIRST!

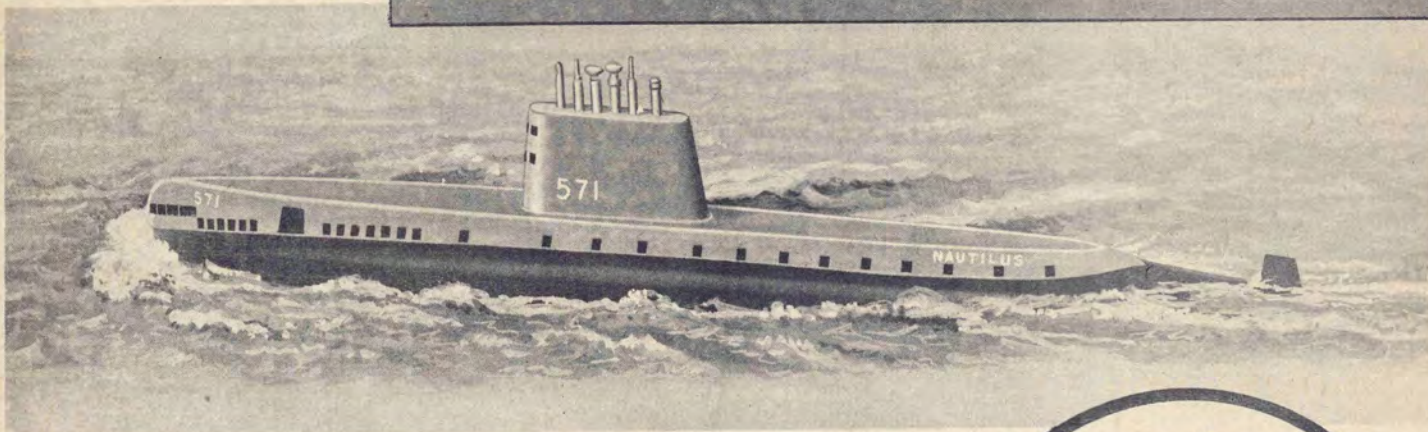
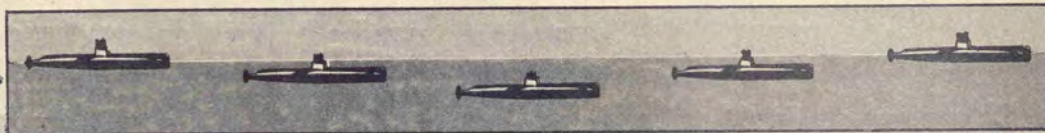
The Very First
Operating Model



★ U.S.S. ★
NAUTILUS
atomic submarine

Patent Pending

OPERATES LIKE A REAL SUB!
Submerges! Surfaces! Cruises!



Operating Scale Model of the World's First Atomic Submarine

Big exciting news from Scientific! A real-as-life operating model of the U.S.S. Nautilus! It cruises on the surface of the water . . . submerges to periscope depth . . . then automatically re-surfaces. ALL UNDER ITS OWN POWER! No engine or motor required. It's really exciting to watch . . . even more thrilling to operate! Designed by Walter A. Musciano — who actually worked on the plans of the full-sized Nautilus. The model comes all prefabricated. Assemble the few ready-formed parts in minutes . . . and you're all set for an entirely new and different kind of modeling thrill. The complete kit features a one-piece carved balsa hull (fully half-a-yard long), formed conning tower, adjustable metal diving planes and rudders, rubber powering (U. S. Rubber's T-56), unbreakable high-thrust propeller, finished shafts, decals, etc. All complete except for lead ballast (which you can pick up at any hardware store). If you like modeling . . . you'll love this real operating sub. See it soon at your dealers!

only
\$1.98
complete
except for
lead ballast

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SPECIFIC
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If no dealer is available, add 10c (postage & packing) to cost of model

NEW TERRIFIC SCIENTIFIC SPECIALS



TORPEDO SPEEDBOAT \$2.50
LENGTH: 20" BEAM: 8"
Sleek new speedboat for OUTBOARD engines. Prefabbed, w/ genuine mahogany veneer hull.



SEA HAWK \$2.50
"1/2 A" Eng., CO₂ or Elec. Motors
Has a 12" carved balsa hull, brass metal fittings, etc. Aeronautical design.



RIVIERA \$3.50
For "1/2 A" Eng. or Electric Motors
Authentic Chris-Craft replica with 12" carved balsa hull & brass fittings. All parts finished.



BUCKEYE JR. \$3.95
LENGTH: 14" For .020 to .074 Eng.
A "beaut" of a speedboat. Prefabbed with a carved balsa hull, brass fittings, etc.



LITTLE BUCKEYE \$1.95
"1/2 A" Eng., Jetex, Elec. Motors
Low cost speedboat thriller. Prefabbed, 12" carved balsa hull, brass metal fittings, etc.



HALF-PINT RACER \$2.95
LENGTH: 9" For "1/2 A" Gas Eng.
Model speeds over 40 m.p.h. Direct-wheel drive. Prefabbed formed body, rubber wheels.



AMERICAN BOY \$1.00
SPAN: 18" For .020 to .074 Eng.
Our U-C trainer, the biggest dollar's worth of model airplane in the world. 100% complete.



NO. AMER. TEXAN AT6 \$1.95
SPAN: 18" For .035 to .074 Eng.
Our extremely popular scale model of the AT6 Trainer. Carved balsa fuselage, etc.



LITTLE MUSTANG \$1.95
SPAN: 18" For .020 to .074 Eng.
Famous escort fighter model. Prefabbed. Features carved balsa fuselage, formed balsa wing.



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SPAN: 24" For .09 to .19 Eng.
Class 'A' profile trainer. Extra rugged. Assembles in a jiffy. 100% complete, 100% prefab.



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SPAN: 16" For .020 to .074 Eng.
Betty Skelton's (Pitts Special) championship stunt flyer. Highly colorful, all prefab model.



STUNT MASTER \$1.50
SPAN: 18" For .035 to .099 Eng.
The stunt-nest 1/2 A stunt plane ever... all prefabricated model with a carved balsa fuselage, etc.

BRAND NEW!



F-100 SUPER SABER
18" WINGSPAN FOR .035 TO .074 ENG.

Make and fly this sensational U-Control model of America's first supersonic jet fighter. Kit is 100% complete... features a tricycle landing gear, carved balsa fuselage and all prefabricated parts.

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RED DEVIL
18" WINGSPAN FOR .035 TO .074 ENG.

A terrifically colorful all-around U-Control model... with just a few ready-formed parts that practically fall together. Kit includes: carved balsa fuselage, formed landing gear, rubber wheels, colorful flaming decals, etc., etc.

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Top Value! Low Price!

Take your pick of these 4 new authentic scale models... with 18" spans. All are prefabbed for quick, easy assembly. Each has a carved balsa fuselage, air-foiled wing, metal cowl, etc... every one a terrific U-Control flyer.

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SPIRIT OF ST. LOUIS



PIPER CUB
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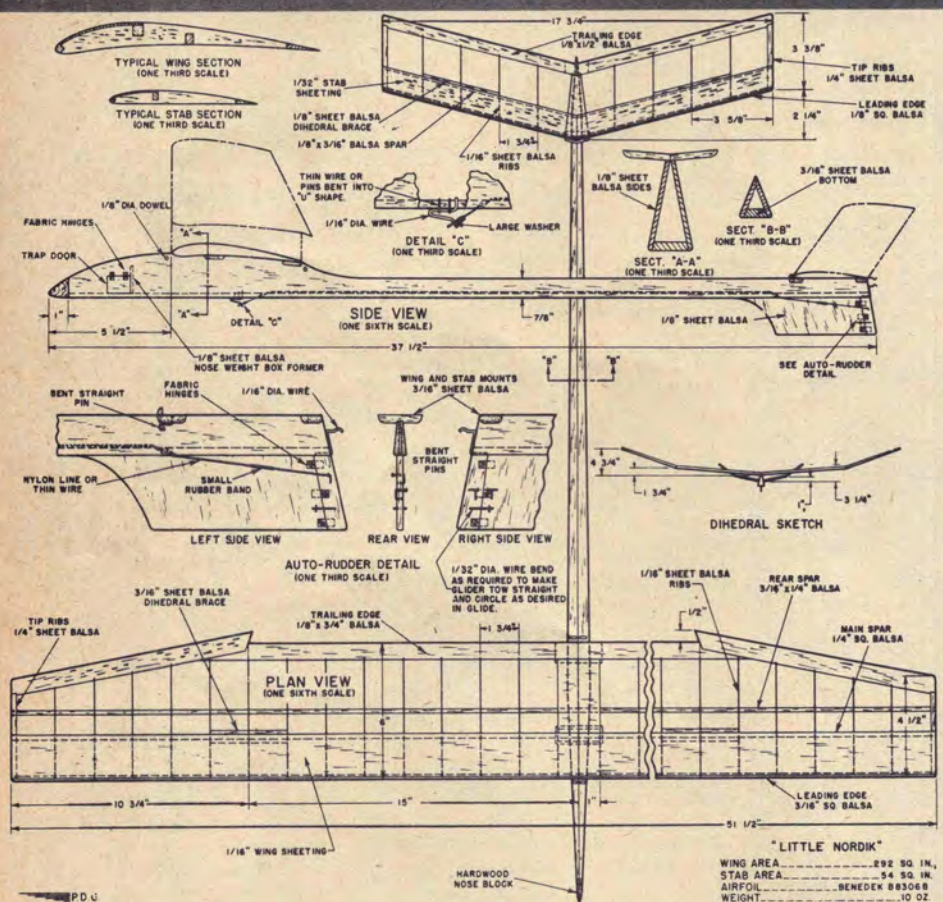
"Little Nordik" TOWLINE GLIDER

By **GEORGE PERRYMAN**

Member U.S. International Competition Team



First contest "Little Nordik" entered was a National meet. It not only won first but set national record, too!



Here's one outstanding authority who admits he's lazy, so he designs 'em simple yet they fly like crazy!

■ *Little Nordik* was designed to eliminate fancy formers, bulkheads, and stringers, yet retain appearance and performance. I have long been an advocate of simplicity of construction mainly because I'm too lazy to build the hard way.

The basic design follows closely that of big brother *Nordik* which I flew in the 1953 International Glider Championships held in Yugoslavia. The long tail moment arm permits use of an 18% stabilizer. This utilizes the total area of 350 sq. in. to best advantage by putting most of it in wing area which is what determines to a great extent the glide. First contest *Little Nordik* entered was the Nationals at Philadelphia where it won the open division with a new national record of 12:13.

The automatic rudder makes possible a straight overhead tow, which contributes considerably to altitude over most present gliders flown in this country. Few American gliders will attain full height on the tow line. This auto-rudder is a variation of European methods.

The wing airfoil section, the Benedek B8306B, was derived from work done by Dr. Georges Benedek of Hungary. This section is found on many Continental designs, and has an outstanding lift/drag coefficient.

The construction of the wing and stab is handled in conventional manner like that of most planes you have built, so I will not go into detail. The fuselage, though a bit different, is a pleasure to build. Cut the two sides from one-eighth

medium sheet balsa to the shape shown. The bottom is cut from three-sixteenths medium sheet. Bevel the edges of the bottom piece as shown on view A-A, and pin down on a flat board. Bevel the sides at their top as shown on view A-A. Glue the two sides to the bottom and let dry. Before pulling the top of the fuselage together, insert the nose weight stop about $3\frac{1}{2}$ " back of the nose and glue. Pull the two fuselage sides together and glue beveled edges. When dry, glue on noseblock and carve to shape. Sand the whole fuselage to a smooth surface, and apply Silkspan over the whole structure. This prevents balsa from splitting under hard landings. Cut notches in fuselage and add the wing and stabilizer mounts. Add dowels for wing attachment, hooks for stab, and glue on sub-rudder. Cover the wing and stab with rubber-powered Silkspan and apply four coats thin dope with a bit of castor oil added.

Flying is simple. Add nose weight until ship balances $2\frac{1}{2}$ " from trailing edge of wing. The wing is normally set at 4 degrees but slight adjustments may be made by adding shims under leading edge to correct diving tendency, and under trailing edge to prevent stalls. A word of caution here; never add more than one-eighth inch under trailing edge of wing on this design if it stalls, but rather, add more nose weight.

The auto-rudder is easily manipulated. Slip the tow cord ring over the hook, and slide the spark plug washer with line attached to rudder over end of hook as shown in Detail C. Circling in glide is obtained by bending wire attached to fin to allow rudder positioning. With a little practice, you achieve a straight tow and smooth right circle in the glide.

Be sure to utilize the dethermalizer, because if you fail to light the fuse you may be in for quite a hike.

Remember, it has been said: "The only difference between an expert and an amateur is plenty of sandpaper and a strong thermal." This may not have been that famous old Chinese philosopher and box-kite flyer, Confucius, but it was a mighty wise man nevertheless.

Half-size plans (with full-size rib) are part of Group Plan #955 from Hobby Helpers, 770 Hunts Point Ave., N.Y.C. 59 (50c).

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CONVENTIONAL & NEW INBOARD ENGINES

NEW! TROPHY RACER INBOARD HYDRO

- (AAA) Quality Balsa Hull & Sponsons Fully Shaped & Sanded Ready for Painting
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- Length 14" — Beam 7"
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KIT E-6



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ALL PARTS
ASSEMBLED
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FAMOUS WORLD WAR I FOKKER TRIPLANE

Scale model of one of the most unusual fighter planes of World War I. Retaining all of the prototype's performance ability this handsome model will be the center of attention wherever it performs. (AAA) Balsa construction, prefabricated wings and fully shaped cowl, colorful decals. 14" wing—length 11½".

½ A CONTROL LINE

\$2.95
KIT G-6



Stearman Crop Duster \$2.95

½ A control line scale model of one of America's famous commercial planes. (AAA) balsa with all parts assembled in box 14" wing span—length 12".



Balsa Cat Boat .75

KIT E-3. All parts die-cut plus decals and sails.



SUPER SWAMP BUGGY \$3.95

Scale model of the Air Boat of the Florida Everglades. Pre-glued formed (AAA) balsa hull, Decals, Motor mount and hardware incl. for .049 engines, L-16", B-8".



BRITISH SE-5 \$2.95

Scale model of the famous World War I fighter. 14" wing span, ½ A control line, (AAA) Quality balsa, assembled in box ready for cementing.



THE FORTY-NINER \$1.95

½ A control line speed model monoplane. (AAA) Quality balsa, completely prefabricated partially assembled ready for cementing. Wing span 15"—length 13".



FOKKER D-7 \$2.95

14" Wing span, ½ A control line scale model of the terror of the skies during World War I. (AAA) balsa, assembled in box ready for painting.



BALSA HYDROPLANE \$3.95

Modeled after the world's record smashers. Full shaped (AAA) balsa with extra strong stern for new outboard motors—Length 14"—Beam 6".



JUNIOR SWAMP BUGGY \$1.00

(AAA) balsa hull. All parts die-cut plus decals. Length—11"; Beam 5". For .020 or electric motor.

Model Boating

(Continued from page 55)

Radio Engineering); these three operated three boats at once and put on a most interesting show of close maneuvering with their electric-powered craft. The show went along so well with the one 3-at-a-time demonstration, plus precision, speed and different motive power runs, that all the special stunts the boys had rigged up were canceled. They had carefully planned balloon busting, relay races, two boats running at same time on same frequency, etc.; these events will be saved for the next show at the Hospital, and there will doubtless be another since this first one was so well-received. The only trick they did show was the water-ski experts—Butch Cameron and Tony Chiboucas—who towed model skiers behind their craft most realistically (more dope on this next issue).

An invitation to attend a big R/C boat contest was sent to France's Société des Yachts Modeles de Bordeaux, and Carl Dunlavy received a nice letter of thanks from Juan Menanti. Seems Jean is a member of the IMPBA and has received a lot of information of speed boat design from Charles Maxmann and Bob Graham in this country. He points out that members of his group have a tough time obtaining the parts they need, since hobby shops are scarce in France, and they must make most of what they use. His club has about 40 model boats in operation, the wide variety including battleships, submarines, air-sea rescue craft, torpedo boats, river cruisers, steam and diesel yachts, and various types of speed boats. Jean was a bit apologetic

about the speeds reached by the latter, but noted that his "Spido 3" reached 74 mph last year. New hulls to Baxmann and Traband design are under construction, and a new McCoy Redhead .60 has been obtained; he notes that "... there is no doubt we will have best results with that roaring business."

Doings of the speed boat set are reported by Bob Graham (127 Cottage St., Jersey City 6, N. J.), who says that the big battle scheduled at Philadelphia had to be called off—no water at either of the lakes normally used. Rough water has plagued the New York Model Knights practically every Sunday, but even so, a few members have gotten in good runs. Max Biederman's Class D boat has been timed at 83 mph, driven by a homemade 10 c.c. engine, while Bob was able to show a speed of 80 mph for a single lap with his new Class E boat; same boat made a complete loop and kept right on running, on another occasion!

Other speeds made recently are—70 mph by Jack Scholl's Class D boat, same speed by new member Tom Harges in Class E, and by Joe Horvath with homemade 15 c.c. engine in Class C. Larry Richards, Tom Demeskey and Bob Graham have new Class F (5 c.c.) boats; the Model Knights will include a Class F event in their Sept. 11 race at Kissena Park (Flushing, N. Y.). Bob says that he has heard from Salvatore Orlando (Viale S. Martino N. 100, Messina, Italy), who is champion of the 2½ c.c. class in his country with a speed of 43 mph. He has new boats for 5 and 10 c.c., and Bob says these boats look very good, judging from the pictures and drawings he has seen of them.

This seems a good spot to try to convince the R/C boatmen among our readers that they should send in their form and get the F.C.C. license they should have, in order to legally operate their transmitters on the 27¼ or 465 mc. Citizen's Bands. The R/C plane boys have found their numbers increasing so rapidly that the "ready lines," even at weekend flying sessions, are growing longer and longer. "We need more frequencies for R/C," these boys wail to the F.C.C. Latter comes right back with the comment that since they have only received about 7,000 licenses, they can't see why more space is needed.

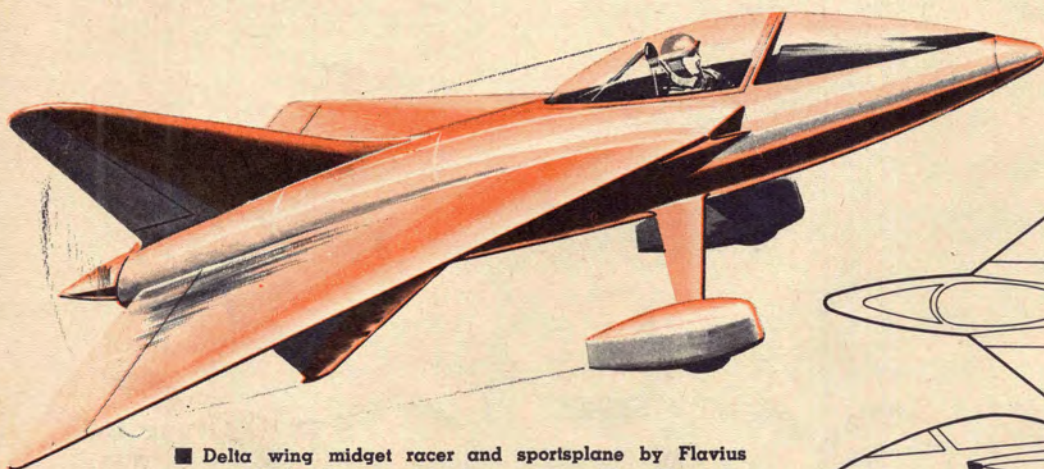
Now, anyone who has done any R/C work at all knows that there are many times 7,000 hobbyists active in planes, boats, cars, etc. in this country. The answer, then, is simply that a great many of these hobbyists just haven't taken the time to fill out the simple form and mail it in. And until they do, the F.C.C. can say with a perfectly straight face that "We can see no need for more R/C frequencies." Remember, the F.C.C. isn't going to canvass all the flying fields and lakes to find out how many are operating on the Citizen's frequencies; to them, the actual count is precisely the number of license forms they process. All right—get those forms filled out and mailed; check your clubmates and friends to see that they do likewise.

We are sorry to learn that Bill Baughman (5738 Deane St., Los Angeles 43, Calif.) has resigned as Commodore of the Los Angeles Model Power Boat & Yacht Assoc. As far as we were concerned, Bill had functioned as a first rate publicity man for the group, too, and we note that since Bill resigned, none of those most

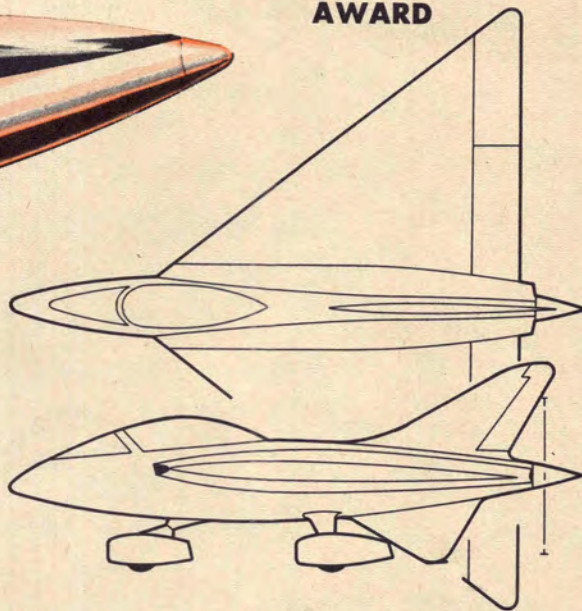
(Continued on page 58)

AIRCRAFT DESIGN COMPETITION

FIRST
\$50
AWARD

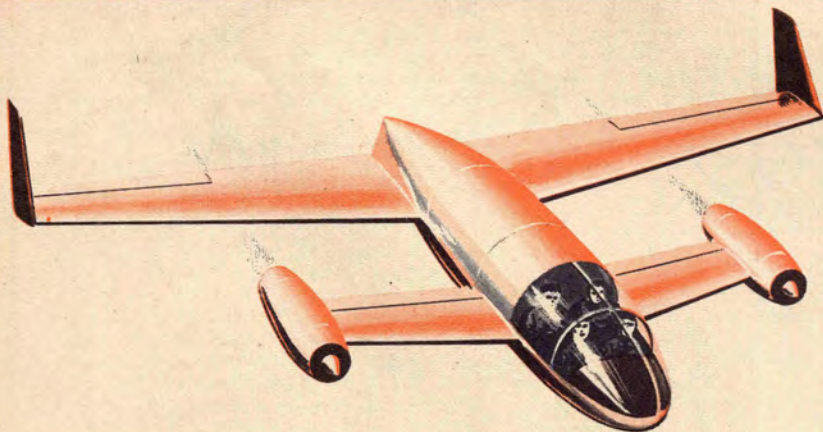
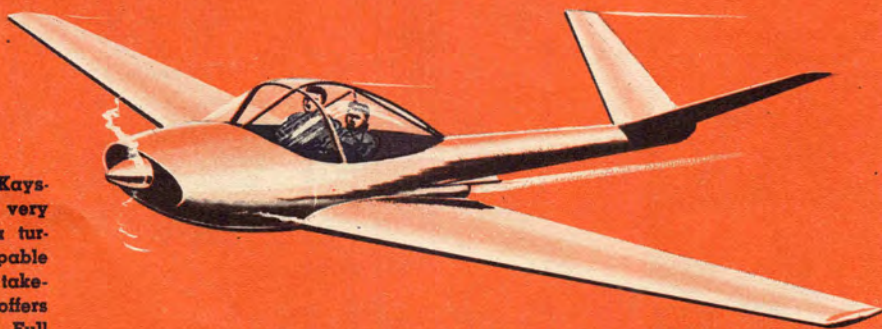


■ Delta wing midget racer and sportsplane by Flavius B. Rowell, Jr., Denver, Colo. Powered by either 90 cu. in. engine of 85 hp or larger one of 150 hp driving a pusher propeller. Cooling air is ducted in at wing root intakes and exhausted through opening in the tail cone. As a racer plane, has two-wheel landing gear. Tricycle gear is used on the sportsplane.



SECOND
\$25
AWARD

■ Turboprop lightplane by Gordon T. Ward, Kaysville, Utah. A fast light personal transport of very clean design seating two and powered by a turboprop engine of approximately 225 hp. and capable of cruising at around 300 mph. has slow take-off and landing speed. Large Plexiglas canopy offers excellent visibility from the pressurized cockpit. Full instrumentation for blind flying. Ceiling 25,000 ft.



THIRD
\$10
AWARD

■ Four-place canard executive transport by Richard Coss of Downing, Calif. Powered by two turbojet engines of 1000 lbs. thrust each. Powerplant location permits carrying considerable fuel supply in fuselage. Cabin fully pressurized and air conditioned. Three-wheel landing gear with main portion retracting into the fuselage. Wingspan 40 ft. Top speed 400 mph.

Rules governing this "aircraft of the future" competition are as follows: Three-view sketches of the envisioned aircraft will be required. These should be not less than 8½ x 11 inches for the entire three views. Give sketches of the complete airplane or space craft in three-quarter front and rear positions. Photos of a model of the proposed design may be included: information on the powerplant(s), estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the

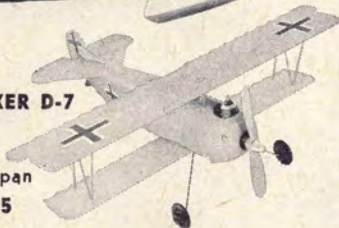
editors and judges. The design may be of any type; space craft, commercial, military planes (fighters, bombers, troop transports), planes for the private flyer and sporting or racing planes. The entry each month judged the most practical or of the greatest significance will receive an award of \$50; \$25 for second place and \$10 for third. Mail entries to Aircraft Design Competition, c/o Air Trails HOBBIES for Young Men, 304 E. 45th St., New York 17, N. Y. The editors regret they cannot enter into any correspondence or return any submissions.

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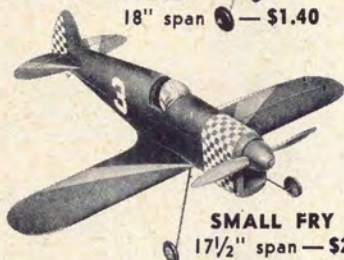


"**SPIRIT OF ST. LOUIS**"
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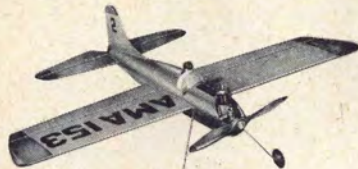
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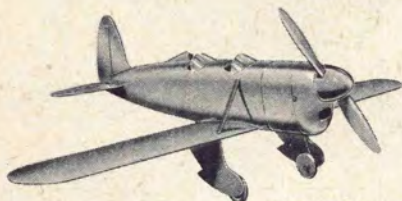
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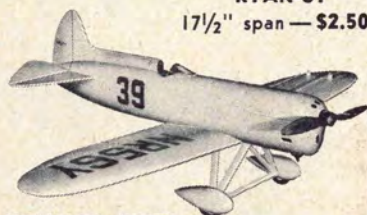
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17½" span — \$2.50



HOWARD "IKE"
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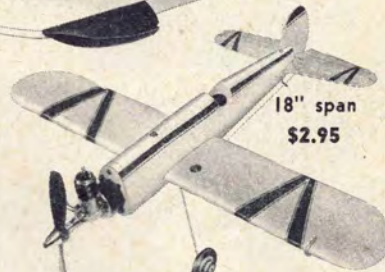


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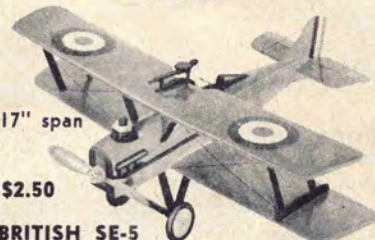


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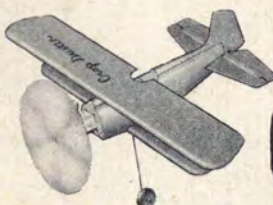
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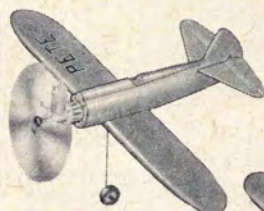
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Model Boating

(Continued from page 55)

informative news bulletins of SCMPBYA happenings have reached this magazine. (Whassamatter, fellas?) Bill hopes to become a little more active in building and operating his own boats now, suggests that anyone desiring to contact the Association write to Roy Donovan (6118 S. Mansfield, Los Angeles 43, Calif.), who is the present Secretary-Treasurer.

Commercial Items. Kit for a realistic harbor tug intended for R/C and either steam or electric power is being produced by Model Shipways, (Bogota, N. J.). Craft is to be offered in two forms, one with parts of Styrene plastic, the other of wood. Both are the same size—27" long, and 5/16" scale copy of the real thing. Main reason for the two types of kits is that the plastic job, which will sell for considerably less, is not suitable for steam power, since the heat affects the plastic. Hull and deck of the wood kit are of pine, with balsa superstructure. Fittings for either kit are of metal, and fittings kit will retail for about \$6. Prices for the hull kits not certain yet, but the plastic job will be about \$22.50 and the wood one \$40. This boat is ideal for R/C due to the large displacement—in fact it will usually be necessary to add considerable ballast to bring the boat to the proper level in the water.

First marine model product of Model Engineering Works (Box 506, Arcadia, Calif.) is a pram-design Racing Hull intended for model outboard engines. Boat is 16½" long and beam is 8". Kit has die-cut balsa and plenty of hardware, costs \$2.95.

Berkeley Sailfish, a replica of well-known style of small racing sailboat, has been increased in length, now measures 18½". It will still sell at the original price of \$1.95 for the kit.

Scale copy of the Chris-Craft 25-footer, which has low forward cabin and large open cockpit, is new addition to line of Dumas Products (Box 6096, Tucson, Ariz.). Kit retails for \$5.75. Dumas has 18 power boat kits ranging from 21 to 33½" in length, and there are nine new outboards in the line. Send for listing. It's free.

Model Car News

(Continued from page 16)

Question for the Speed Boys. Bob Taylor (Milford, Iowa) wants to know why you couldn't put two of the largest engines in a car with four-wheel drive, and top any speeds made so far? Guess you could, Bob, but just plain speed isn't the goal—you have to make the *best speed in any of the recognized classes* of race cars—that is, if you want to race with anyone else. Since car classes are set up on the basis of engine displacement, your monster would have *twice* the displacement of any car now being run. So even if it did go at tremendous speed, it wouldn't prove much. Then, too, your brainchild would be a trial to start, and you would have to keep both engines running at very close to the same speed or your tires would soon grind themselves right down to the hubs.

Doings in AMRCA circles comes from Carl Noward, Secretary (1384 Berdan Ave., Toledo, Ohio). Race scheduled for Toledo had to be called off, after three attempts to get going, because of rain.

Air Trails HOBBIES For Young Men

It will be held the night before one of the Detroit races. Ontario, Calif. race showed these winners: Custom class—Ray La Bahn, "Frypan" car, 138.46; Manufactured Proto—Gen. L. A. Smith, Arrow, 128.38; Carl himself was able to attend this race, came out with a 4th in Custom. Only Custom Proto was run at Belleville, Ill., winner being Carl Franz with 148.51—a new track record; Carl also took second with another car that hit 147.78., while Walter Wilson Jr., who holds the present World's Record in this class came in 5th with 141.73. The boys figure Junior will be going much faster before long! Results of race sponsored by the Akron club: Custom Proto—Bob Loose (Reading), 141.50; Class A—H. Rasmussen (Cleveland), 126.05; Class BB—Guy Richards (Akron), 106.63; Class B—Bob Seigmyer (Cleveland), 107.01. Hopeful note for those who run their cars on straight nitro—rumor says that Dooling will have some new pistons for sale.

Last-minute report of a race at Fox Speedway in Bethlehem, received from Bob More. Big news of this one is that a 15-years-old topped all the hotshots in Custom Proto; to be sure, he was teamed with a real knowing race-car man, in the person of Petri Antenucci, but Jack Wolf gets a lot of credit just the same. The A & W team actually ended up in a tie with Howard Fox, but when it came time for a run-off of said tie, Fox discovered his gear box was shot, so A & W became the champs. Several hundred spectators saw this first-of-the-season race at the Speedway. Some of the old-timer hotshots had their problems; Bob Loose brought two cars to the races—and his old maroon job claimed a solid third, but the new car, which features the mag mounted on the gear box instead of on the engine as is usual, sheared a gear pin on the start.

Our reporter took fourth with More, Senior following in fifth. The A & W team had 148.27, Fox was next with same time (but lost out for first) and Loose had 147.78. A newcomer to the model tracks, Erwin Stein, who has been an active hot rodder, was 7th; he had reached a track record speed of 147 mph at the Lakehurst track on Armed Forces Day. In Manufactured Proto, Franny Wolf had 127.29, while Al Winter took Spur Gear with 131.38.

One of the most unusual cars seen at the races did not place; its tiny parts were beautifully made and fitted (Bob says like a "Swedish puzzle") by Arne Zetterstrom, one of the top model racers of Stockholm, Sweden. Ignition trouble was the main problem, but this will doubtless soon be cleared up. When it came time to hand out the trophies, the Bethlehem gang, in a most sportsman-ship-like gesture, passed theirs on down the line to the next winners.

That's being the good host!

That demon secretary—Carl Dunlavy—tells us that the Corona, Calif. Miniature Racing Assoc. competition was a great success. This was the deal with three events for cars that were Hot—Warm—Cool. When it was all over, the boys discovered that the awarding of trophies was somewhat unrealistic; the highest 15 places were listed from fastest to slowest, the first five men being awarded Hot places, next five were Warm, last five rated Cool. First, second and third in each of the three divisions got trophies and ribbons, fourth and fifth got only ribbons. As Carl points out, "the
 (Continued on page 61)

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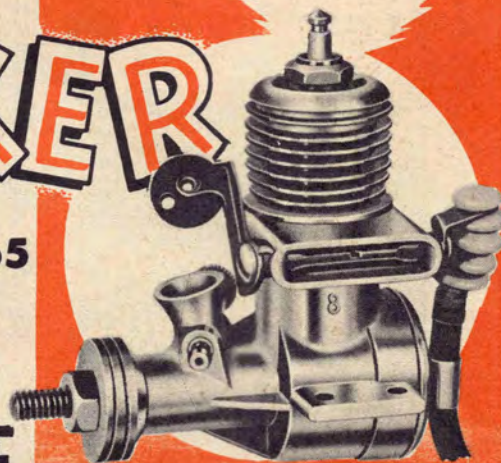
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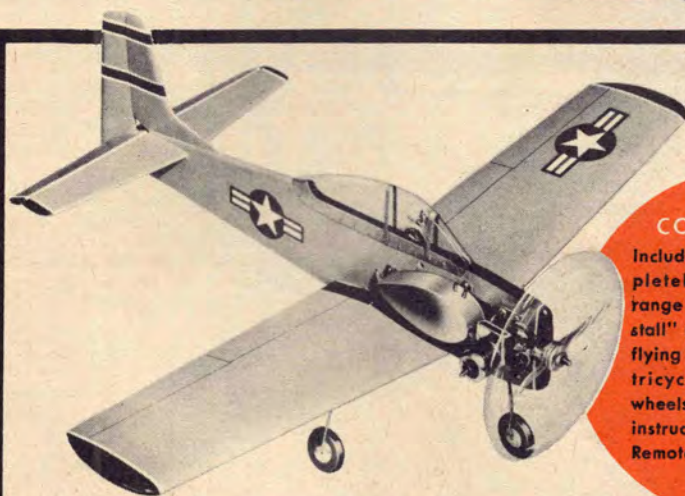
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CALENDAR of HOBBY MODEL MEETS and SHOWS

IND—Anderson, Aug. 11-13. AMRCA miniature race car national championships. Carl Noward, 1384 Berdan Ave., Toledo, Ohio.

IND—Muncie, Aug. 14. National Mites Race Car Assoc. "nationals" model car race. C. W. Foster, Jr., 815 W. Virginia Ave., Kokomo.

CALIF—Arcadia, Aug. 14. Air-model team racing. Les McBrayer, 1238 1/2 S. 2nd St., Alhambra.

MICH—Detroit, Aug. 14. IMPBA model boat regatta. Charles Baxmann, 2991 Garland Ave.

OHIO—Alliance, Aug. 14. Exchange air-model meet. Edward Cross, 23 E. State St.

MASS—Beverly, Aug. 14. N.E. R/C air-model championships. J. K. Ross, 23 Lantern Lane, Wellesley Hills.

IND—Indianapolis, Aug. 14. Mid-States air-model meet. R. C. Rhein, Allison Div., General Motors Corp.

N.J.—Haddonfield, Aug. 14. Hi-Way Glo-Bugs' air-model team racing. George Moir, Main St., Mantua.

N.C.—Winston-Salem, Aug. 20 & 21. Free flight air-model meet. Lloyd Hathaway, Recreation Dept., City Hall.

MICH—Detroit, Aug. 21. Air-model meet. W. E. Bartlett, 14515 Asbury Park.

OHIO—Toledo, Aug. 21. AMRCA model car race. Carl Noward, 1384 Berdan Ave.

WISC—Manitowoc, Aug. 21. Air Pirates' air-model meet. W. A. Lea, 1030 N. 14th, Sheboygan.

N.Y.—Plainview, Aug. 21. Screamin' Demons L.I. championships. L. C. Walker, 17 Brookdale Dr., Bay Shore.

IND—Kokomo, Aug. 21. Air-model championship. J. C. Braun, 106 E. Gano St.

ILL—Danville, Aug. 21. Jaycees' state air-model championships. Dick Grack, 17 W. Main.

ONTARIO—Toronto, Aug. 27. IMPBA model boat regatta. Robert Johnson, 228 The Kingsway.

COLO—Grand Junction, Aug. 28. Exchange air-model meet. R. D. Mulford, 379 S. Redland Rd.

ILL—Belleville, Aug. 28. AMRCA model car race. Charles Flynt, 1014 E. McKinley.

ILL—Chicago, Aug. 28. Model boat race of CMPBA. J. R. Mathews, 10451 S. Parnell Ave., Chi. 28.

CALIF—Los Angeles, Aug. 28. Air-model free flight scale contest. R. E. Moncrieff, 2108 Santa Fe Ave., Torrance.

WASH—Seattle, Aug. 28. IMPBA model boat regatta. E. W. Drouillard, 141 N. 85th St.,

ILL—Marion, Aug. 28. Lions' air-model meet. E. H. Aikman, 1020 N. Market St.

ILL—Harvey, Aug. 28. R/C Club of Chicago air-model meet. R. E. Webb, 1303 W. 79th St., Chicago 20.

OHIO—Cleveland, Aug. 28. Half-A free flight air-model meet. J. W. Grega, 355 Grand Blvd., Bedford.

MO—St. Louis, Sept. 3-4. IMPBA model boat race, Forest Park. Pete Yangzer, 2017a Chippewa.

TEXAS—Dallas, Sept. 3-4. Southwest air-model championships. Maurice Teter, 2025 Abrams.

List your hobby club's public shows, exhibitions and contests here! There's no charge. Advise "ATH" not less than 90 days in advance. Give telephone of contact man if possible. Send to "Calendar," c/o Air Trails HOBBIES, 304 E. 45th St. New York 17, N. Y.

Address of contact man is in the same city as site of event unless otherwise specified. This publication does not assume responsibility for any errors in listing.

Air Trails HOBBIES For Young Men

BRITISH COLUMBIA—Vancouver, Sept. 4. British Columbia air-model "nationals." Brank Boden, 3647 Shepherd St., South Burnaby, B. C.

MICH—Detroit, Sept. 4. IMPBA model boat race, Belle Isle. Charles Baxmann, 2991 Garland Ave.

OHIO—Lancaster, Sept. 4. Skylarks air-model meet. Paul McGrew, 331 E. Main.

KAN—Goodland, Sept. 4. Gashoppers air-model meet. Kenneth Armstrong.

MINN—Monticello, Sept. 4-5. Midwest PAA-Yoad air-model meet. Walt Billett, 2541 Nicollet Ave., Minneapolis.

N. J.—Far Hills, Sept. 5. Lions Club air-model meet. C. M. Vanderwaart, Lamington Rd., Bedminster.

N. Y.—Flushing, Sept. 11. IMPBA model boat race. Bob Graham, 127 Cottage St., Jersey City 6, N. J.

CONN—Hartford, Sept. 11. Team racing air-model meet. R. H. Haines, 75 Evergreen Ave.

ILL—Chicago, Sept. 11. IMPBA model boat race. J. R. Mathews, 10451 S. Parnell Ave., Chi. 28.

CALIF—Inglewood, Sept. 11. Skywolves' team race air-model meet. D. C. Crystal, 805 E. Palmer Ave., Compton.

IND—Evansville, Sept. 11. AMRCA model car race. Kenneth Craig, 309 N. Willow Rd.

N. Y.—Plainview, Sept. 11. N. Y. Aeronuts air-model meet. Murray Quitko, 410 E. 57th St., Brooklyn 3.

MICH—Detroit, Sept. 11. IMPBA model boat race. Charles Baxmann, 2991 Garland Ave.

MD—Baltimore, Sept. 11. Control line air-model Olympics. F. G. Stroh, III, RFD 6, Pasadena, Md.

OHIO—Cleveland, Sept. 11. AMRCA model car race. Robert Seigmeir, 6703 Pelham Drive, Parma.

MASS—Boston, Sept. 11. N. E. Wakefield Group's air-model Sweepstakes. Lee Renaud, 300 Hyde Park Ave., Boston.

CALIF—Sacramento, Sept. 11. Oakland Cloud Dusters Half-A free flight air-model meet. Joe Bilgri, 256 1/2 Locust St., San Jose 10.

OHIO—Cleveland, Sept. 11. Cuyahoga County R/C air-model meet. J. W. Grega, 355 Grand Blvd., Bedford.

N. J.—Perth Amboy, Sept. 18. Flying Olympics air-model meet. J. P. Gyorfi, 115 Watson Ave., Woodbridge.

WASH—Seattle, Sept. 18. IMPBA model boat race. E. W. Drouillard, 141 N. 85th St.

OKLA—Tulsa, Sept. 18. Glue Dobbers Nordic air-model glider meet. W. H. Kehr, 4940 N. Johnstown.

CONN—West Haven, Sept. 18. Southern N. E. control line air-model meet. A. D. Mahieu, 181 Maplewood Ave., Milford.

N. Y.—Bayville, Sept. 24. Screamin' Demons' L. I. Sound hydro air-model championships. D. J. McGovern, 81-53 242nd St., Bellerose.

N. J.—Union, Sept. 24. UMAC air-model meet. A. J. Karp, 625 18th Ave., Newark.

PA—Philadelphia, Sept. 25. IMPBA model boat race. Ray Seavey, Jr., 8634 Temple Rd.

MICH—St. Clair Shores, Sept. 25. Modellers' proto speed and team racing air-model meet. Howard Lewis, 21520 Calif. St.

IND—Newcastle, Sept. 25. AMRCA model car race. Russell Harter, 805 S. 20th St.

PA—Johnstown, Sept. 25. Bucks County Federation air-model meet. A. J. Becker, Jr., 2212 Griffith St., Phila.

ILL—Chicago, Sept. 25. IMBPA model boat race. J. R. Mathews, 10451 S. Parnell Ave., Chi., 28.

OHIO—Columbus, Sept. 25. AMRCA model car race. Clarence Miller, 1207 Lilley Ave.

KAN—Wichita, Sept. 25. Wichihawks' air-model meet. J. P. Valle, 3891 E. Bruce.

WASH—Seattle, Sept. 25. IMPBA model boat race. E. W. Drouillard, 141 N. 85th St.

IND—Michigan City, Sept. 25. National Mites Race Car Association model car race. C. W. Foster, Jr., 815 W. Virginia Ave., Kokomo.

MICH—Detroit, Sept. 25. IMPBA model boat race. Charles Baxmann, 2991 Garland Ave.

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"YOUNG MEN"

(Continued from page 58)

mouse in the beer" here is that 5th place men in Hot and Warm received only ribbons, while other times that were slower than theirs took home nice trophies. But anyway, it was a different type of race, and was a lot of fun.

Carl has put up a trophy that will go to the car man who makes the best endurance run; first tries for this were scheduled to be held after the speed runs have been completed on June 12. Rules for the Endurance Contest are simple—cars are limited to the .60 class and all fuel must be carried inside the car. It is felt that gear ratios, fuels mixtures, etc. will be vital here; interest will be on fuel economy, not on top speed. Owners will have three attempts of three minutes each to get their car away, and one lap is considered an official run. Whole idea behind this contest is to get some of the older and slower cars out of mothballs and back on the track; if the Corona group makes a go of it, the idea is likely to catch on in other areas. Carl's trophy will be held by man making longest run the first day, and he can hold it till his time is bettered.

One more helpful idea comes from the Corona M.R.A.; they have regular Denison shipping tags measuring about 2 1/4 x 4 3/4", with the words "Pit Pass" printed on them in big red letters. Members of the CMRA are authorized to hand these to friends who want to get into the pits for a closer look-see at the doings. Passes are supposed to be turned in when the holder departs. As Carl says, "People on the outside of the fence at least ask if they can come in, now," instead of just crawling over the fence.

Nautilus

(Continued from page 29)

required six pounds of lead ballast in battery and receiver compartments and 3 pounds in motor compartment. This much weight in addition to payload weight of batteries, motor and other gear was needed to bring model down almost to scale waterline. Total weight ready to run was 14 pounds. Another one or two pounds of weight could be added to bring model to exact waterline.

If lead ballast is used as shown on the drawings, the two pieces in R/C compartments can be molded in a tin can with same diameter of sub interior. Bird shot was poured under motor platform then openings at sides were covered over to retain the shot. No matter what kind of ballast is used, be sure to hold it down permanently so that it won't move around and damage interior while handling or running model.

The receiver can be enclosed in balsa box to aid waterproofing if desired. An 18" length of steel wire is installed on the sail for receiver antenna, connect to receiver with spring clip or plug and socket under deck. R/C equipment used was standard RCH-27 mc. A four-position escapement proved adequate to move rudder even against high water loads. A servo motor or special boat escapement could be substituted of course.

Final model details include white numerals 571 and NAUTILUS on sail and hull sides. Bow diving planes are scrap sheet cemented in place against sides. Anchor is located on right side only. Ballast vents along sides are simulated with rectangles of plastic electrical tape stuck to sides.

(Continued on page 63)

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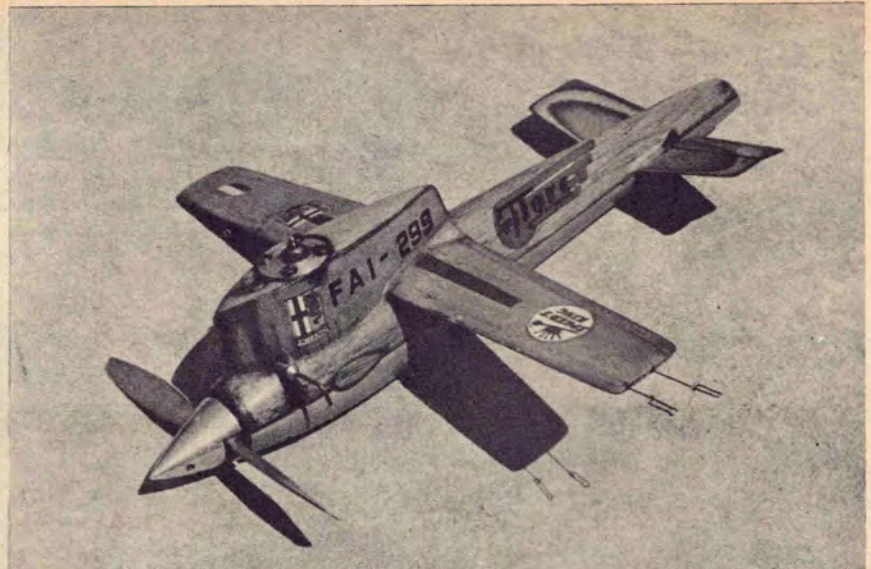
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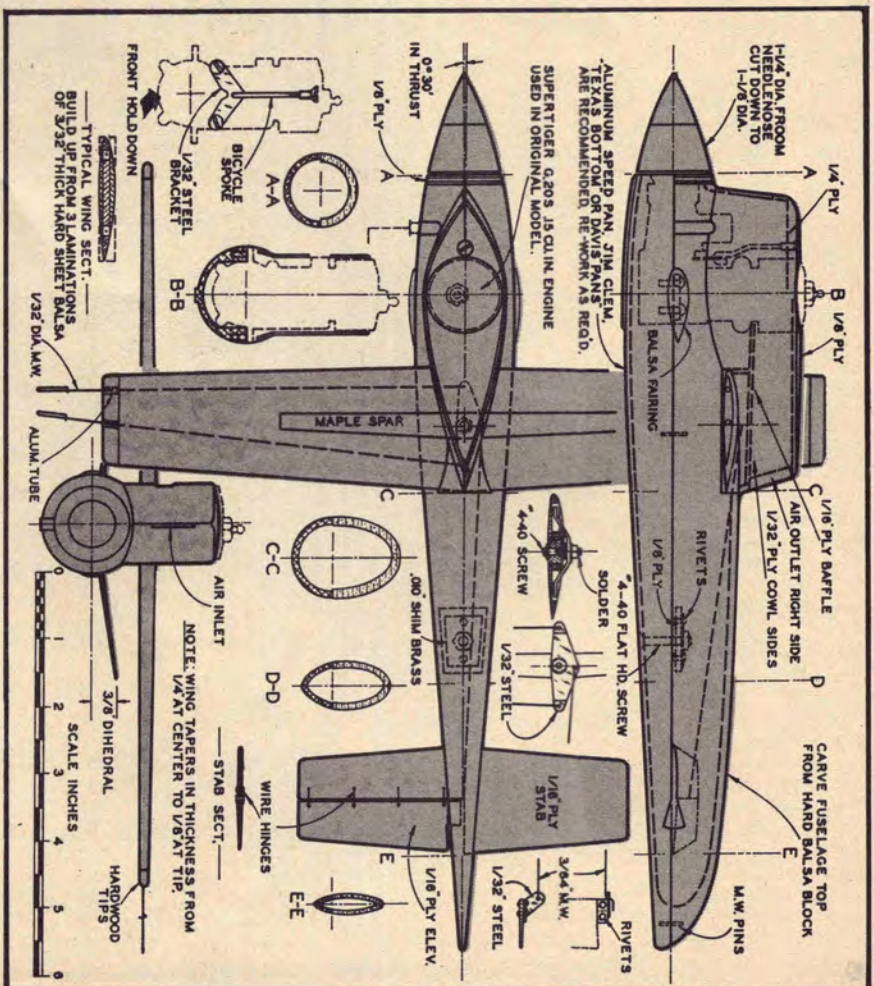
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New F.A.I. Class A U-control world speed champ at 190.470 km/h is Italy's Amato (he's from Bologna). Plans show basic aircraft with same modifications in materials.

Similar in looks to Harold deBolt's latest Speedwagon 29B, craft differs somewhat aero-dynamically; construction is quite different.

Prati Amato's Record Setting "SPEED KING"



Full-size plans for "Speed King" are a part of Group Plan #955-A from Hobby Helpers, 770 Hunts Point Avenue, New York 59, N. Y. (35c).

(Continued from page 61)

The mast details in sail top are pretty much builder's choice. Original model had only the periscope extended as if sub were preparing to dive.

Make display stand of hardwood and dowel. This can be painted to suit. Cover top with felt or padding of some sort to protect finish.

The model makes an impressive sight in the water and despite weight really scoots along at a good clip. The alternate single prop installation was used on Lashek's first model and because prop is deeper in the water it gets a better bite and drives the sub a bit faster than the scale twin prop set-up.

Bill of Materials

36 1/8" x 3/8" x 36", planking. 4 1/4" x 36", keel, crutch. 3 3/16" x 3" x 36", bulkheads, 2 3/16" x 1/2" x 36", bilge keels. 1 1/8" x 3" x 36", decking.

1 1 1/4" x 2 1/2" v 4 1/2" block, deck rear. 1 2 3/4" x 2 3/4" x 6 1/2" block, hull real. 1 3 1/4" x 3 1/2" x 4 3/4" block, hull bow. 1 1 1/4" x 3 3/4" x 6 1/4" block, sail (conning tower).

Scrap 1/4", 1/8" plywood, escapement, motor mount. 2 1/8" dia. wire 15" long prop shafts. 2 1/4" I.D. 3/16" O.D. tubing 10" long, shaft tubes. 2 1 3/8" dia. Nylon props, r.h. and l.h. 2 couplings for 1/8" tubing (auto supply), stuffing boxes. 1 Pittmann 9001 Panther motor. 1 K&O Twin drive gear box. 1 Willard NT-6 6 volt wet cell.

Five lbs. lead bird shot. Tissue, primer, dope or enamel. Miscellaneous scrap brass, wire, tubing for rudder drive. 1 Navy anchor, Marine No. 11-1 1/8" long, 5/8" wide.

Under Control?

(Continued from page 15)

Dale Root (6036 Telegraph Ave., Oakland 9, Calif.) has been having tough luck with his hot shoulder-wing "Ascender." A 720 sq. in. job, it has multi-controls and will do everything—in fact it did 10 consecutive outside loops recently when controls stuck! Another time, Dale (well, his model) fell out of an Immelmann with down elevator and under 100 ft; he had thought the plane was right side up until it hit the ground and the LG was sticking in the wrong direction. He opines that "... it gets tiresome always learning the hard way!" Lots of modelers will say amen to this. The plane has been a beautiful performer, is fitted with 40% flippers and they are "trimmable;" Dale says after flying with this setup he will never go back to smaller elevators with neutral-return setup. Despite the inverted pile-in mentioned above, he took fourth place in a State contest in which he was flying at the time.

The grapevine informs us that Major Hank Bourgeois will be stationed at Quantico, Va. starting in July. No address yet, but his numerous friends will be able to reach him at the Marine Base.

Technical Notes. John Worth (Box 9, Hampton, Va.) sends a few notes on the Keuhnel, dual-proportional control system. First, he notes that the problem of obtaining a good pulser for this and similar systems seems to have been solved by use of the Good circuit, shown here in the January '55 issue; he offers a note of caution, however. One such pulser was built around a Sigma 41 relay, and the results were very non-linear at one end of the range; trouble was found to be residual magnetism. Armature could touch the pole-piece and usually stuck there momentarily. This was cured by a piece of tape over the core end, but could also have been cleared up by adjusting the armature so it couldn't touch the core. John notes that his group has had very good results with this pulser,

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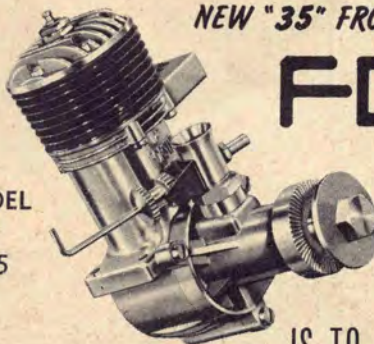
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Air Trails HOBBIES For Young Men

using only 45 V., which gives 2-3 ma. through the relay. The other main problem with the system is encountered by those who try to work it using a rudder actuator that has no iron in the core. We will have some circuits in this column to take care of this angle soon, but meanwhile don't try the Keuhnel system unless your actuator has husky iron core and pole-pieces.

Another note on the Good pulser comes from the originator, Dr. Good himself, who says that one builder had trouble with frequency shift when the pulse width was varied. This was found to be due to tube unbalance, and was cured by replacing one of the 15K screen grid resistors with a variable resistor, which could then be adjusted to attain proper balance.

Owen Black (2833 Clover Lane, Sacramento, Calif.) tried the Simple-Double we had here in the Feb. '55 issue, but left off the grid leak to the second tube. He found the second stage would idle at zero, rise to 2.5-3 ma. on signal, and would pulse as fast as he wanted. However—if left standing for a few moments with no signal coming in, the second tube plate current would rise slowly to full drain. This action seemed to depend upon the quality of coupling condenser used; mica condensers would doubtless be the best. Owen has used the circuit with a Mini-Mac and a C-S 27 for the first stage, and 3V4 and 3E5 tubes in the second, and all work about the same. Best results seem to come with the first tube idling around .5-.7 ma.

Improved results from the Simple-Single have been obtained by F. W. Field (135 Depot St., Bennington, Vt.) with a few simple changes. He replaced the 3S4 tube with a 3E5, which cuts the filament drain to about 25 ma., and used a 100 mh. R.F. choke. He didn't say what make of choke, but the little National R-33 units would probably do. The socket has to be rewired for the 3E5 tube; terminal 1 goes to A minus-B minus, 2 and 3 are tied together (they are plate and screen grid), 5 goes to A plus, and 6 is the control grid. The plate current runs at 2 ma., drops to .7 with signal. Owen would like to hear from readers who try these substitutions, suggests the use of 4,000 or 5,000 ohm relay as giving best results.

Very useful RF choke for 27 1/4 mc. receivers was suggested to us by Jerry McGeorge (2239 Ridgewood Ave., Highland, Ind.); he has found the Miller "Video Peaking Coil," a TV component carried by almost every radio supply concern, to be just right. The part number is 6152, and as far as R/Cers are concerned, this is a tiny 20 microhenry choke; it sells for 29c, and has been found to work perfectly in a number of 27 1/4 receivers, among them the WAG audio tone job. It should also be fine in the Bonner Tuned-Relay receiver. Jerry is sweating out a sub-miniature audio tone receiver, with three channels selected by tiny tuned toroid coils. At last reports it was rounding into shape, and may be in a plane by now. He has gone through a lot of woe with this receiver, and would probably be glad to help other builders who are interested in this type of equipment. Set has six tubes, which Jerry has found can be any of a number of types; biggest problem has been in getting the three tuned filters to work right. In anticipation of the complete controls this receiver will allow, Jerry has an Over-&-Under ready to carry it.

Big stunt biplane built by Ernie Kratzet (482 St. Clair, Grosse Pointe 30, Mich.) has turned out so well that we will have a set of pictures on it, and describe some of its exploits in a later issue. Called the ESKimo, plane was designed solely for hot contest performance—seems able to fill its role well. Ship looks so realistic in air that it fooled the commanding officer of Selfridge (Mich.) Field; field had been closed to most big plane flying, to allow use of the area for a two-day model plane meet. A demonstration of R/C flying was on the program, and Ernie put his biplane up early in the morning for a few test flights. The Colonel spotted it in the distance, said: "Who the devil let that crate in here? He's not on the program!" Turned several shades of red when an aide explained that it was on the program, since it was just an R/C model.

Commercial Offerings. A publication that should be most helpful to the R/C experimenters is on the way from Ace Radio Control (Box 301, Higginsville, Mo.). This will be an "R/C Bibliography" in loose-leaf form, so that it may be kept continuously up to date. It will be departmentalized, some of the headings being General R/C Articles, R/C Planes, R/C Boat Plans, Receivers, Transmitters, Control Dept., etc. Cost not settled at this date, but will probably be around \$1.50, and articles from eight publications including ATH were indexed in the early copy we have seen. Ace has just issued Supplement 55-2 to the earlier catalog, listing many new kits, components and publications.

New items at Gyro Electronics Co. (325 Canal St., New York 13, N. Y.) include beautifully made 7-pole ball-bearing PM motor for \$3.95; measures 2 x 1 x 1" overall, weighs 3½ oz., and is intended for 27 V. Motor has carbon brushes, runs fairly well on 12 V. Gyro has supply of unused Price DPDT sensitive relays, with 6500 ohm coils. Can be adjusted to work nicely at around 1.5 ma., have easily adjusted coil springs and heavy silver contacts. Relays sell for \$3.95 each. Concern also has good supply of target drone receiver filters; each filter is an individual unit complete with tuning capacity, and there are five frequencies, ranging from 300 to 3,000 cycles. Filters sell for \$1 each.

A set of information sheets on transistor applications, including an R/C receiver, may be had from Raytheon Mfg. Co. (55 Chapel St., Newton 58, Mass.) for the asking. Many interesting units are included, and the data will be invaluable to those who hope to experiment with transistors. The lowest cost Raytheon transistor, the CK722, is now listed at \$2.10 by the large mail-order radio concerns.

Electronic Specialty Supply Co. (58 Walker St., New York 13, N. Y.) which was first concern to make a miniature quench coil available to R/C field, now has an even smaller and lighter one. Called "Sub-Mini-Q," it weighs .3 oz., measures about 9"16" in diameter and length, sells for \$1.85. The larger Mini-Q is still available for \$1.65. ESSCO carries the new Advance sensitive relay in stock; it can be had in 4,000, 6,500 and 10,000 ohm sizes at prices from \$6-6.60.

New Products Co. (Box 643, Union, N. Y.) is going into production on Model T700 escapement, which has a high resistance coil and is intended for use with transistors. Unit will operate reliably on 10 ma. and maker will include circuit data with the unit.

New units offered by CG Electronics Corp. (305 Dallas St., N.E., Albuquerque, N. M.) include ½ oz. Model V-11 sensitive relay; it comes adjusted to pull in at 1.4 ma. and open at 1 ma., has 5,000 ohm coil and sells for \$6.30. CG has two new reed units with coil resistance of 7,000 ohms, and weighing .4 oz. These are designated Model AR-2 (two reeds) and AR-3, and sell for \$11.95 and \$12.95. Reed frequencies are between 250 and 400 cycles. Also new is Model RT-2 2-channel transistorized reed receiver, weighing 3½ oz., and selling for \$69.95. A new catalog describing these and many other CG units is now available.

When we ran article on 220 mc. R/C transmitter (March 1955 issue) designer Hamblen presented a very simple modulation system based on a vibrator power supply, but told us a higher frequency vibrator would be even more satisfactory in the circuit. He and his club mates in the DC/RC have now discovered one—a complete 400 cycle power supply. It is sold by Bagdon's (1046 N. Gay St., Baltimore 5, Md.) for \$6.95. Unit is unused surplus, comes complete with filter and vibrator, is in a case measuring 2¼" sq. x 4¼" high. Vibrator plugs into a socket in top of case. The unit works on 6 V., and is rated at 150 V. at 150 ma. Spare vibrators are sold at 3 for \$2.50.

An attachment which will give a second channel control has been developed for use with the Mitron RS-1 receiver, is designated the K-2. Latter costs \$5.75 complete, but less relay will also work with some other receivers. It must be used with a pulsing signal, closes second relay when pulses cease. The RS-1 receiver sells for \$14.95 ready to use, but less relay, and there is also a Model RS-50 at the same price; this one is for the amateur 50 mc. band.

New line of audio tone equipment is presented by Badaco Mfg. Co. (2801 Penick St., Shreveport, La.). Units are of the non-selective type, but must have an audio tone to operate. Model 180R receiver is compact 2-tube using a 3A5 and 1U5, weighs 3.3 oz. and sells for \$24.95. The Model 180T transmitter is a hand-held unit selling for \$34.95, and usable with various types of receivers. Removal of a "Scotchman plug" on the side of the case cuts current drain, and allows the transmitter to be used on straight carrier. With the plug in, a 100% modulated 400 cycle signal is transmitted. Concern will soon have a set of control boxes for 3, 5 or 6 tones, that also plug into the transmitter, allow it to be used with multi-channel receivers. As it comes, Model 180R receiver requires close to 100% modulation for proper operation, but simple change allows it to work with other transmitters that do not have 95% or more modulation percentage. Above equipment is finished—not a kit.

Cry from a "lonely petunia in an onion patch" comes from Charles H. Brown (Box 455, Tuskegee, Ala.) who has been building and flying R/C alone for three years—and craves company. He flies at the old Tuskegee Air Base, not used by big planes any more, and says that occasional flyaways can always be found, as the base is so large he just stands in one spot watching them till they come down. He has built various ATH R/C equipment, with a Mac II his current favorite transmitter. He is flying a CQ with good results, and has an Over-and-Under almost ready for trials. Besides wanting company, Charley wants to swap—has Arden .199 and .099 engines, Dooling .29 etc., that he would like to trade for R/C gear.

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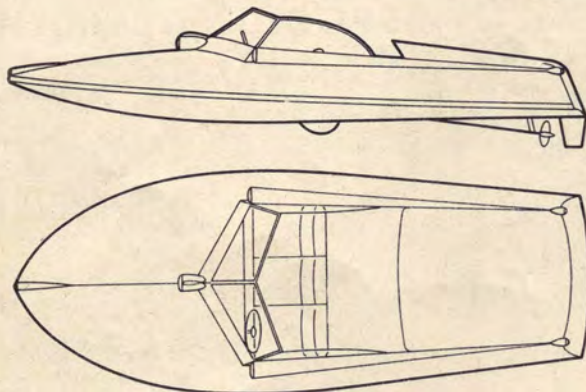
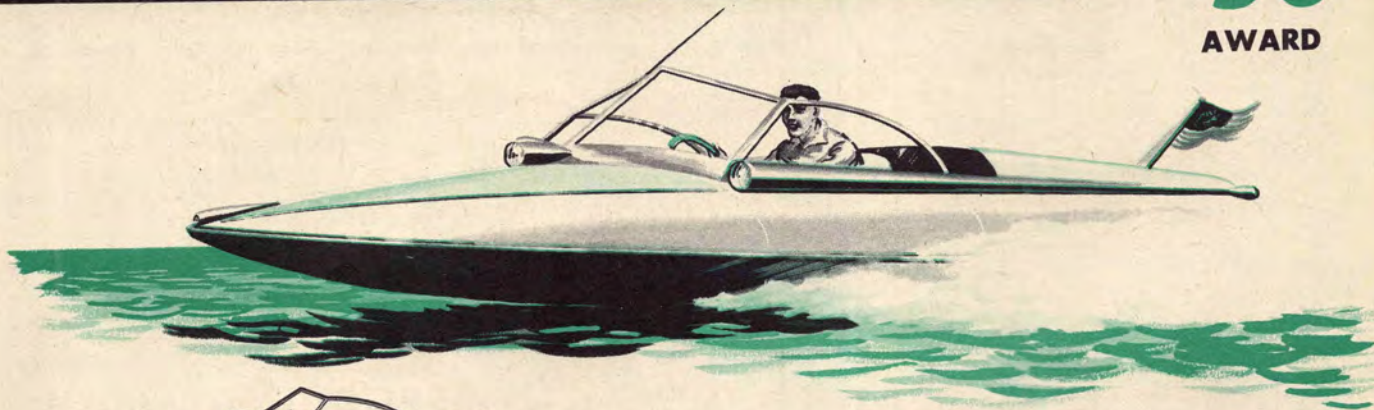
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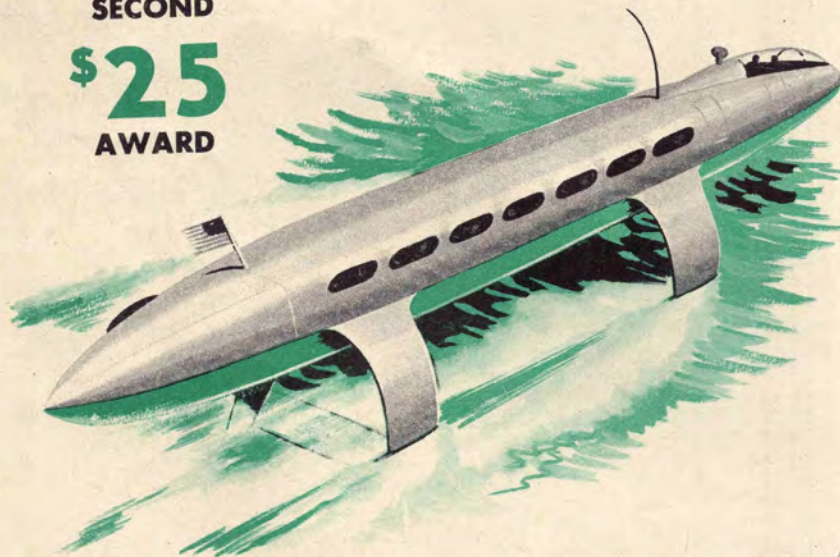
Boat Design Competition

FIRST
\$50
AWARD



■ Snipe is a small, fast runabout by Dale Falk of Minneapolis, Minn. The 18' craft has a fiberglass hull and seats three passengers. Powered by a 70 hp inboard motor which gives the boat a top speed of around 30 mph. Cabin has a bench-type seat and the slanted windshield together with side windows offers good protection from wind and spray. For night running the Snipe is equipped with three "seal-beam" headlights; two are faired into the tubular side-rails. Additional weather protection is provided by a fabric top that can be raised in the event of rain or cold weather. Wide, 7-foot-beam provides excellent stability in rough water.

SECOND
\$25
AWARD



■ Hydrofoil liner by Gerald Veda of Detroit, Mich. Capable of accommodating upwards of 30 passengers for fast ocean crossing or inter-coastal service, it has a hull 85 ft. long, streamlined for high speed. Power is provided by two liquid-cooled engines of 3000 hp each, driving two large variable-pitch propellers which provide ample maneuverability. Top speed 100 mph.

■ Aluminum sail ice boat by John Meyerchin of Collegeville, Minn. Sail has an airfoil shape and is constructed similar to an aircraft wing. It pivots just aft of the cabin; has surface rib structure for lightness. Driver sits inside the "sail" looking out of a large Plexiglas window, well protected from icy winds. Four runners are for added stability, but three can be used. On smooth ice boat can do 100 mph.



THIRD
\$10
AWARD

Rules governing this design competition are as follows: Profile (side), plan (deck) and (cross) sectional views of the proposed craft will be required, plus any detail sketches necessary to illustrate unusual features. Do not handicap yourself by submitting hull drawings less than 6 inches in overall length. Give sketches of craft from three-quarter front and rear positions. Photos of a model of the proposed design may be included. Information of powerplant(s), estimated performance, dimensions and explanations of

special features are required. Data as to age, occupation or schooling of the entrant should accompany each submission. Mail entries to Boat Design Competition, Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y. Entry each month judged most practical or of greatest significance will receive \$50; \$25 will go to second place and \$10 for third. The editors regret they cannot enter into any correspondence or return any of the submissions.

"My Favorite Model"



■ "My favorite model is this 1" to the foot scale free flight model of the Spirit of St. Louis. It has a wingspan of 46" and is powered with K&B .049 Torp.

"The fuselage is built up of 1/8" square balsa with soft balsa blocks around the nose; wing is multispar with sliced ribs. Tail surfaces are built-up and the wing, tail unit, and struts are all detachable. Entire plane is paper covered and doped silver. Nose is covered with a patterned foil to simulate the cowling metal on the original. Tail surfaces were enlarged to improve stability and the spinner is left off to facilitate engine cooling—these are the only deviations from scale. The model has given me a great deal of pleasure, both in building and flying, and brings back all the romance and adventure of the 'Epic of the Air.' The model was built from plans which I drew up myself. Picture was taken with a Spartus 33 mm. camera using Plus-X film.

—Wm. R. Booker, Cape Girardeau, Mo.



■ "My favorite model is 'Whiz-Kid I,' a low slung, three point hydroplane. It is powered by a Japanese Fuji .099. I painted it yellow and black, and it closely resembles a sports car. Its overall measurements are 15 1/4" x 9 1/2" x 2". I have clocked it doing between 15 and 20 miles per hour. The hull is made of basswood, and the sponsons are of balsa. Its low center of gravity minimizes skidding and overturning. Total weight is 16 oz.

—Charles Ribak, Milton, Mass.

Do you have a favorite model? Tell us about it and include some good clear photographs (black and white only, please—no color). Send your entry to: My Favorite Model Dept., c/o Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y. We will return any contributions not used, but cannot assume responsibility for them (don't send negatives unless requested). We pay \$25 for photo(s) and story that appear here. Any type of model is eligible, working or non-working, plane, boat, car, or train.

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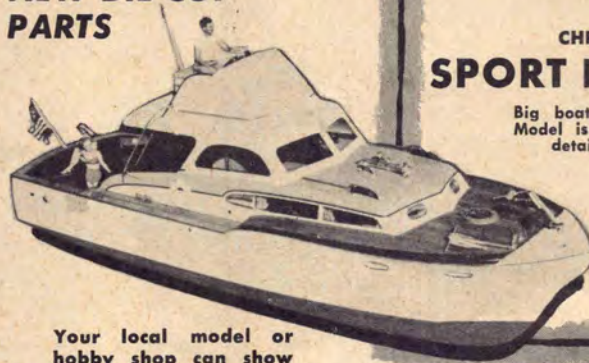
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R. C. FLIERS



With so many model fans going into the popular sport of Radio Control flying, the question of proper propeller selection keeps arising. Here are some simple facts to remember that will help you select the right propeller. Keep in mind that you have a good sized wing span for the engine you're using and as a general rule a heavy loading which averages about 16 oz. to the foot. With this loading you fly at about 20 M.P.H. It is not too difficult to find your proper pitch. It will always be in either the 3" or 4" pitch, not 5" or 6". Below are the suggested diameter and pitch propellers to use for specific engines.

Diesel	.075	9-3	10-2	K & B	.29	11-4	12-4
Glo	.09's	9-3	10-2	Veco	.29	11-4	12-4
Diesel	.09	9-4	10-3	Fox	.29	11-4	12-3
K & B	.15	9-4	10-3	K & B	.32	11-4	12-4
K & B	.19	10-4	11-4	Veco	.32	11-4	12-4
Fox	.19	10-3	10-4	K & B	.35	12-4	13-3
K & B	.23	10-4	11-4	Fox	.35	11-4	12-4
Fox	.25	11-3	11-4				

On ringed engines such as Old Forster 29-31, McCoy etc. use either 1" less pitch or 1" less diameter. These engines are made for high R.P.M. output and do not load the additional diameter as well. Also note Fox engines. These are also high R.P.M. output. 5" and 6" pitches have less static thrust and will not pull model through a stall as well as the 3" or 4" pitch.

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"Zebra"

(Continued from page 26)

lamp bulb as a load, it will be very dim. As you increase capacity the meter reading will drop, while the lamp glows brighter and brighter. Somewhere around midscale (if C3 is at the proper setting) the lamp will be at its brightest and the current the lowest. As you go on beyond this point, the lamp will suddenly go out, and the meter will jump to 30 ma. or so and stay there; this means that the tube has stopped oscillating. At the point just before you get this plate current jump the power output is the greatest; however, you should not tune the transmitter to this point, when using it with an antenna, as it might stop putting out at a critical point; just back off C4 toward minimum capacity until the meter rises about $\frac{1}{2}$ -1 ma., and you will be at a safe operating point.

Checks with a FSM have shown that this transmitter puts out a surprising amount of power. One reason for this is undoubtedly the fact that the large case bottom affords good "ground capacity"; for the same reason, moving the key leads around does not affect the transmitter output radically, unless of course, you hold the lead too near to the antenna. For the more technically inclined, the current drain on the cell was found to be 4.8A., when the plate current was 18 ma., dropping to 1.6A, when the key is open.

Screen grid current can be measured by plugging a meter into the key jack, and will be $3\frac{1}{2}$ -4 $\frac{1}{2}$ ma. when the transmitter is properly loaded.

Incidentally, the whole outfit in its tool case (but less antenna, fuel cans and all other extra equipment) weighs about 17 lbs.—not a load you would want to carry for several miles. But you shouldn't mind this weight as you walk out to the operating site with your model in one hand and the "tool-case transmitter" in the other—and watch your pals struggle along with separate transmitter, tool box, fuel cans, extension cables, pocket full of props, model, etc.

Parts Required: One tool case and aluminum to make chassis and partitions (see text). 3D6 tube and local socket (Gyro). C1, C2, .002 mf. ceramic condensers. C3, 3-12 mmf. ceramic trimmer. C4, 15 mmf. midget variable cond. with extended shaft. C5, 50 mmf. ditto. C6, .004 mf., 600 V. paper cond. C7, 4 mf. 450 V. electrolytic. C8, 20 mf. 450 V. electrolytic. R1, 150 ohms; R2, R3, 100 ohms; R4, 2.2 ohms; R5, 30,000 ohms; R6, 3,000 ohms; all $\frac{1}{2}$ W carbon. R7, 47,000 ohm 2 W carbon. T, 2 V. vibrator transformer (Gyro). Vib., 2 V. synchronous vibrator and 7-pin socket to fit (Gyro). CH. Stancor C-2327 filter choke. Meter, 50 ma. (5 ma. meter with a 50 ma. shunt used here—Gyro). Heavy duty SPST toggle switch (Gyro). Open circuit midget phone jack and insulating washers. XTAL, Petersen Z9A and socket to fit. 2 V. storage cell—surplus Willard "Radio 20-2" or "Radio 27-2"; latter preferred because of higher capacity (Gyro). Charging plug and socket, Amphenol type 61MP and 61F11. Wire for hookup and coils. 9 $\frac{1}{2}$ ' antenna and support insulators. Tool cases similar to the one used here are listed by Palley Supply Co. (2263 E. Vernon, Los Angeles 58, Calif.). Item TB100.

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Overall length 24"
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hobby outlet ... it will set
your eyes popping.

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illustrated to make assembly a cinch

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Landing Craft

(Continued from page 45)

1/8" balsa sheets ramp is first cut roughly to size, then pockets for lead are gouged out of each half. Cement slab of lead between ramp pieces, then join them securely. Sand to shape and apply wood filler until good finish is obtained. Ramp is attached to bow with strip of thin, strong handkerchief cloth or a loose fitting piano hinge.

Entire hull can now be painted medium grey. Apply four or five coats. Thin out last two coats with ten percent lacquer thinner. Decks are dark grey. Use masking tape to provide straight color line. Three coats of dark grey should be brushed onto decks. Again, using masking tape, mask off hull bottom and color dark red. Apply three coats. When this is dry boot topping should be masked off and colored black.

All miscellaneous deck details can be fabricated, sealed and painted, then cemented in place on decks. Majority of these items can be purchased in cast metal form. It is advisable to "clean up" castings before they are painted and installed. Cut mast and fog oil drums from dowel. Wire whip antenna doubles as radio receiver aerial. Allow sufficient length of aerial wire from receiver to whip antenna so you can remove Poop Deck.

Wheelhouse platform or landing is made from heavy celluloid or thin balsa. This is not cemented to Wheel House but just to bulkhead; therefore it does not detach as do Poop Deck and Wheel

House. Cement ladders in place to this platform; one leads down to Main Deck and is cemented to it. Other ladder leads up to Poop Deck but is not cemented to it.

All ladders, bitts, chocks, davits, deck boxes, chain, etc., are colored medium grey as was hull. Add to bulwark braces after they have been painted.

The miniature Patton tank adds realism. This is plastic with much detail and is produced by Ideal Toys.

Add lead ballast weight to float craft at waterline as plans illustrate. Amount of ballast required will vary depending upon the amount of equipment installed.

List of Material

7 1/8" x 3" x 36" med. balsa, hull sides & bottom, Poop Deck, Main Deck, Fore Deck, bulkheads, transom, bulwark. 1 1/2" dia. x 6" dowel, fog oil drums. 1 3/16" dia. x 36" dowel, bulwark rail. 1 1/4" dia. x 24" dowel, mast. 1 .049" x 24" music wire, whip antenna. 1 .010 x 6" x 12" celluloid, gun emplacement splinter shields, lifting pad eyes, look-out, ramp chain guides. 1 2" x 2" x 12" med. balsa, vent hoods, winch.

Slow drying cement (4 oz.), sanding sealer (16 oz.), med. gray dope (8 oz.), dark gray dope (4 oz.), dark red dope (4 oz.), black dope (2 oz.), metal Danforth anchors (2), metal inclined ladder, stanchions, chain, wire coat hanger, cast metal bitts and chocks, Scientific Marine Units (3), electric motors, slide switches, stranded insulated electrical wire, solder, straight pins, sheet brass, brass tubing, metal running lights.

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TOGGLE SWITCHES, SPST	.25
SLIDE SWITCHES, SPST	2 for .25
KEYER PUSH BUTTON SWITCH	.50
POTENTIOMETER miniature size, 10K or 25K	.35
POTENTIOMETER, dime size 10K or 25K	.75
CERAMIC TRIMMER, 3-30 m/f or 7-45	.30
PADDER for Simple Single or Mini Mac Sets	.50
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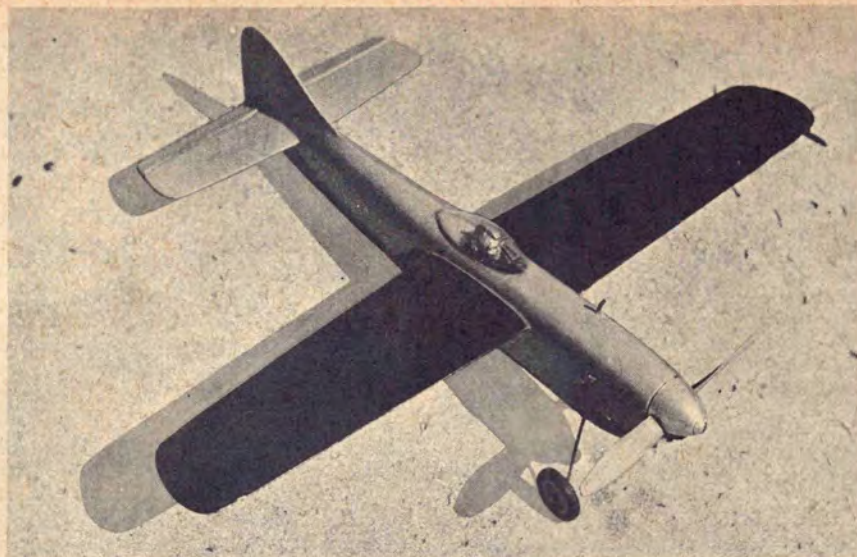


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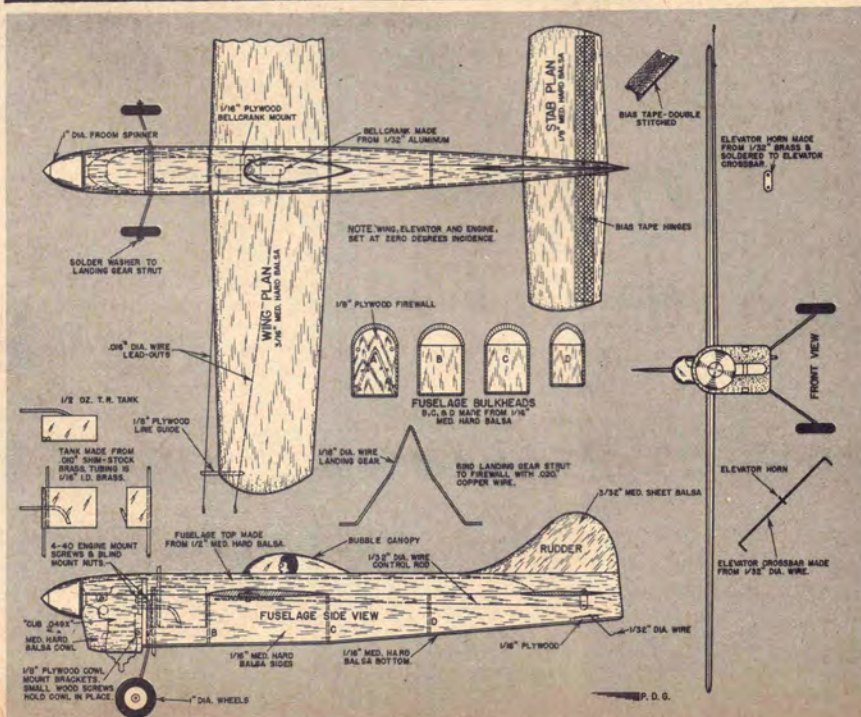
■ It was early in the spring when the Palm Beach, Fla., Cloud Busters voted to try something a little different in the way of a monthly club contest. After a number of suggestions we selected a Half-A U-control event because the Juniors would be able to compete along with the Senior and Open members. It was decided to use a plane that had somewhat the proportions of a Team Racer or Proto Speed ship. After much discussion we hit upon the following rules:

1. Engine displacement not to exceed .049 cu. in. 2. Fuel tank not to exceed

½ fluid ounce. 3. All planes to fly in a counter-clockwise direction. 4. Minimum wing area of 35 square inches. 5. Plane must have a dummy pilot with clear vision cockpit. 6. Plane must have a fixed landing gear. 7. Engine must be cowled with the exception of top two cooling fins on cylinder.

In practice these rules worked out well, and allowed the builder to use his imagination. Some really nice designs were evolved from these rules which resulted in many hotly-contested meets.

One nice thing about the Half-A ships is the fact that they can be flown



Full-size plans for The Reamer are part of Group Plan #955A issued by Hobby Helpers, 770 Hunts Point Ave., N. Y. C. 59 (35c).

on short lines. Usually it's hard to find a suitable spot to fly. This too was our problem. The only convenient and suitable place to fly was a concrete block parking lot; the catch here was that 26 ft. 3 in. lines were the longest we could use. So all our contests were run off on this length .066" lines.

The first several contests were speed dashes for 10 laps from a standing start. My wife, Beth, trimmed all of us with her version of the Reamer in this first race. Incidentally, this was the first plane Beth built that had an engine in it.

Later races were run for 5 miles from a standing start with one pit stop mandatory. This meant 160 laps on 26 ft. 3 in. lines. The Reamer usually does 100 to 109 laps on this-length lines which gives a good margin of safety. The Reamer set a club record for the 5 mile dash of 5 min. 9 seconds.

If you want things to really get hectic, try flying two or three of these Half-A's at one time. That's when things really get hot. We have flown three ships at once on 26 ft. 3 in. lines and that was really something to see.

On 35 ft. lines these little ships can be flown in heat races the same as full-size Team Racers.

So if you want something to give your club activities a shot in the arm, try Half-A Team Racing. It worked for us and it can work for you.

CONSTRUCTION. The Reamer is designed around a Cub .049X, although any other engine can be used by altering engine and cowling to suit. I use the Cub .049X because it is a rugged, simple to mount engine that has easy starting characteristics hot or cold and isn't a fuel hog.

First, cut (former A) firewall out of 1/8" plywood, drill engine mount holes and holes to wrap landing gear to firewall. Mount engine to firewall using 4-40 bolts and blind mount nuts. Bend landing gear from 1/16" spring steel wire and wrap securely to firewall with .020 copper wire, and securely glue wraps and landing gear to firewall. Cut formers B, C, and D from 1/16" medium hard balsa. Cut sides of fuselage from 1/16" medium hard balsa and mark former locations on them. On a level place lay out fuselage and securely glue all formers in their proper places.

Make tank from .010 shim-stick brass and use 1/16" I.D. brass tubing. Use a non-corrosive flux and 50-50 lead-tin solder. Make sure you do a neat job on all solder joints as the tank is sealed in the plane and you don't want trouble from it later on.

After fuselage is dry, install tank in its proper location. Use small balsa blocks to hold tank in place and glue.

Carve and sand wing to desired airfoil from a piece of medium hard balsa. Make bellcrank from 1/32" aluminum. Make bellcrank mount from 1/16 plywood and carve out recess in wing for this block. Mount bellcrank to block with 2-56 bolt, using washers as spacers, and solder nut to bolt to prevent loosening. Glue bellcrank mount to wing.

Make elevator from 1/8" medium hard balsa. Make elevator horn and crossbar as shown on plans and assemble, using double-stitched bias tape for hinges.

Carve fuselage sides to receive wing and elevator. Wing, elevator, and engine are all set at zero degree incidence. Use top of fuselage sides as a guide. Make pushrod from 1/32" steel wire and adjust to proper length. Make up lead-out wires from .016 music wire. Notch fuselage and formers to take pushrod and lead-out wires. Pin wing and elevator in place and check to see if the controls are free and move smoothly. If they are not, find the trouble and remedy it. Freely moving controls are important on all U-control models, but even more so on the Half-A. If the controls work freely and incidence is correct, glue wing and elevator in place.

Make tail skid and mount and glue in place. Glue on 1/16" medium hard balsa bottom. Carve fuselage top from 1/2" medium hard balsa and hollow out to about 1/8" wall thickness and glue in place. Make rudder and glue in place.

Carve cowl to desired shape from a suitable size medium hard balsa block. Make cowl mount brackets from 1/8" plywood and glue in place. Cowling is secured with four small wood screws.

Sand down entire model with fine sandpaper and use wood filler on all joints and cracks that need it. After sanding all surfaces down very smooth, give all wood surfaces two thin coats of clear dope and sand lightly. Cover all wood surfaces with light weight Silk-span. This works best if used wet. Then give model about 5 coats of thin dope, sanding lightly between each coat. Next, give model about 4 or 5 coats of real thin sanding sealer, sanding lightly between each coat. Now you can paint the model with your favorite color in fuel proof dope.

Solder on wheels, hook up fuel line and mount engine and you are all set for lots of fun.

I have found a Tornado 5/4 works best on short dashes and a Tornado 5/5 on longer races. Try several different pitch and diameter props to find the one that suits you best.

For fuel, I use 25% castor oil, 10% nitro-methane, and 65% methanol. The Cub works well on this fuel and gives a lot of laps per tank. A hotter or colder fuel may suit you better, so try several different mixes.

—Thomas P. Baker



Although this plane was designed so it could be constructed easily by young flyers, it's fun to fly for any expert.

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Hobby Model World

(Continued from page 43)

You Never Know. Fellow we met the other day is with the Eastman Kodak concern. Mighty interested in models and photography. Name of W. B. Brummitt. A real old-timer (though he doesn't look it!) in the model aviation game, he said. Turned out he had been one of the original members of the famous IMAC group—the Illinois Model Aeroplane Club, first such organized club in the country. Bill Stout was the advisor. Any other ex-members in the audience?

Signs of the Times. We keep hearing from motels, hiway hotels, motor korts—you know what we mean. Took us a while to catch on, but we suddenly woke up to what was producing all the mail. Seems like radio control clubs everywhere are taking up the Selingsgrove plan for R/C weekend galas. That's where everybody comes to talk and eat radio control; there's always lots of sport flying, some impromptu combat demonstrations, perhaps a balloon busting competition, etc. But no official contest with prizes, and judges, and scoresheets, and take-off problems, and applications, and entrance fees, and so on ad infinitum. No, sir, just lots of good plain fun.

Well, devotees of the R/C gala usually find it's a pretty smart thing to take along the family, too. Teen-agers invite Mom and Pop who meet a lot of similarly-harassed oldsters; married fans bring the wife and kiddies—there always seems to be enough of these to entertain one another while the "Old Man" flies, chins, repairs, or disassembles his transmitter. For such a caravan nothing

can be compared to a good motel with a cooperative management. And the R/C'ers are turning up more and more of these. If fact, we've heard of motel proprietors who've become so interested after a week-end of nothing but R/C tenants, they've taken up the sport themselves!

So a cheer for the new type of motel—the one offering a community worktable with plenty of outlets for soldering irons!

Advice to the Mail Order Buyers. We keep hearing from some other folks, too—those who operate mail order model businesses (plans or supplies or R/C equipment, etc.). They keep wishing that someone would pass on a few words of advice to those of you who buy by mail—regularly or once in awhile. It's mostly about how you send cash through the mail. You've heard it many times, but we'll repeat; maybe it'll do some good. First, use a money order if at all possible—it gets preferential treatment; checks are good, but the old M.O. is best of all. If you do insist on sending cash, wrap bills in heavy paper so they can't be seen through the envelope. Don't fold bills up into small bundles. Keep your letter flat; a bulge may result in the envelope tearing when it goes through the post office's stamp canceling machine.

Now in the matter of coins: wrap coins up in a piece of paper so they lie flat and don't pile up on one another and tape the edges shut. Better still, get a supply of the small, strong envelopes that are made just to send coins in. Don't send coins loose inside the regular big envelope that carries your letter or order.

And, incidentally, all mail order con-

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cerns know how to cope with the individual who blithely states "money enclosed" and then who does not enclose any money. This is no way to get free merchandise, believe us.

As we said in the beginning—nothing beats a money order and you always have a record of your remittances.

Tip of the Month. If you've a gal friend or sister or mother who sort of mutters to herself about all the time you put in on your model boats, cars, planes, R/C bench tests, engine running, or your other model "et ceteras," here's a grand suggestion: Hie yourself off to your favorite hobby shop and get her one of X-acto's new Suji wire art kits. Suji is a new craft based upon the ingenious and imaginative use of multi-colored covered copper wire. Finished Suji figures have practical and decorative uses; they make attractive and original gifts. It's an inexpensive hobby—a simple but absorbing project costs about 10c. Best of all, mistakes can be corrected by unwinding the wire and starting over again. Really keen for that 8-year-old who likes to use your resistors and condensers in her doll house!

—THE DOPESTER

WESTERN ROUND-UP

California's 2-day State Championship Contest was held this year at Moffett Field, where the NACA has a number of wind tunnels and where the VTO plane, Pogo Stick, was designed by Convair.

Although the field is very big and the hangar very large, the fact that the day was also Armed Services Day and that

the field was not closed down led to unexpected complications which Pop Robbers, the event directors, and the contestants had to cope with. Ole Man Weather also reared his ugly head and turned the drift away from normal which prevented the Half-A and A Free Flights from getting started on time. In fact, Half-A did not get to fly till the afternoon had rolled around and A not at all on Saturday.

In the hangar somebody deemed it necessary to keep open certain doors which created a prevailing drift and very turbulent air close to the floor; this knocked minutes off rubber times and precious seconds from glider times. Those few performances which topped a minute in hand-launched and that top time of 17 plus in "mike" were certainly not indicative of the quality of the ships entered.

The R/C boys were plagued with interference on Saturday due to taxi and sheriff calls on 27.255, some guys ending up with pieces of airplanes due to this. The cries of how do you know? how can you be sure? were muted by the constant monitoring of the channel with a receiver set on the frequency, which added additional flavor to this event by beaming through the PA system a constant stream of modulated tones as the various controls were actuated by the transmitted signals.

The U-control guys, however, went quietly on their way since none of this hullabaloo affected their starting on time and running fairly smoothly throughout the two-day meet, although it was 10 a.m. before anyone managed to clock an official flight.

Happenings at this contest were plenty—the unexpected appearance of Jim

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Nightingale and Ed Rodemsky who are both stationed at Travis Air Force Base, Ed being so close now he will miss the Nats due to a training schedule in Florida when that event is to take place. . . . The flying of Hal Cover who not only won the State Championship but also posted high time in hand-launched gliders and outdoor rubber, setting three records and garnering as many points as the high point sponsored team. . . . Dale Root's superb R/C flying only to have cockpit trouble while inverted and giving up elevator after he had been piling up an amazing amount of points on this flight. . . . Clark Hahn's Nordic with his

What's in the Name . . .

DOW AFB?

(Bangor, Me.)

At 8 o'clock on the morning of January 7, 1940, four Douglas B-18 bombers took off from Mitchel Field, Long Island, for a two-hour training flight. The flight banked westward, in diamond formation, toward the outline of Manhattan skyscrapers. As the bombers approached the city at 2000 feet, the flight leader ordered a change in the formation which required the pilots occupying the left and right corners of the diamond to swap positions. As the routine maneuver started, the pilot of the rearmost B-18 was horrified to see one of the bombers ahead lock its wing with the tail of the lead ship. The entangled planes swayed crazily for an instant, then fell out of view. Seconds later they crashed almost side by side, into a congested section of Queens. That accident, the worst in 15 years of Air Corps flying, claimed the lives of eleven men, one of whom was Lt. James F. Dow, once a prominent athlete of the University of Maine. In his honor, the Fighter Base of the Strategic Air Command, located near Bangor, Me., was named Dow Field.

really original design and clean construction. Sore-armed Manny Andrade finding a spot for an extra five seconds on one hand launched flight. That growing youngster we saw consume cereal, six eggs, five hot-cakes, three rolls and four glasses of milk for a light breakfast and for only 40 cents, too—some chow, one got the impression that this was propaganda for future sailors.

Bob Beckman chasing around Saturday morning on a car fender, earphone plugged into his Rockwood receiver homing in on that interference. . . . Ed Rockwood, who shot up 12 magazines of color film of the R/C event. . . . Gordie Peterson laying claim to the oldest rubber job on the field. . . . Arthur Watkins' Nordic plagued with towing troubles. . . . The super wonderful job R. A. Mundy, one of the Navy personnel, did in timing from the first ship launched to the last, doing a much better job than most experienced timers. . . . Al Grenoble launching crosswind only to find that all his body English didn't help at all. . . . The tanks of compressed air they were using to start jets—sure beats pumping. . . . Joe Bilgri and Hal Cover, whose ships managed to collide indoors in that huge hangar and being the only two ships in the air. . . . Joe Bilgri, who covered his
(Continued on page 87)

Hobby Club Emblems



Gerhard Engel "presents" insigne of Modellflugclub Nurnberg (Germany). Established in 1946 "by some fantastic hobby fans while model airplanes were strictly forbidden by the military government." Has 45 members; 80% of activity is "gas."



Only club in Vandaveer-Flatlands section, Brooklyn, N. Y., "Skylarks" recently acquired hobby dealer as sponsor. With 20 members, meets Fridays; flying is at Jacob Riis and Marine Parks. Fred Storch, president; mail goes to 2322 Nostrand Ave., Bklyn 10.



One of the oldest clubs in Philadelphia area. Golden Eagles of Delaware County has membership of 25, meets Mondays. All types of aeromodeling from indoor to R/C with emphasis on latter. Data by R. L. Mayer, 839 Windermere Ave., Drexel Hill, Pa.

Send your club insignia—with info on your group. ATH will pay \$10 for each emblem and report used here. Type data and send only printed emblems or decals—no pencil or rough sketches can be used.

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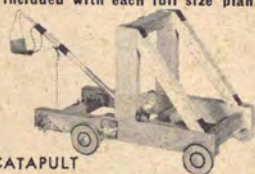
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Torqueless Jetex Reaction Propulsion Power Plants Originated During World War II



■ The idea for a reaction - propulsion motor suitable for model work was conceived by Charles Wilmot and Joe Mansour following their work on rocket - propelled target models for the armed forces during World War II. Together they formed

the Wilmot Mansour & Co. Ltd. of Southampton, England. For the past seven years this firm has been producing Jetex motors and more recently model kits designed for use with their engines. Distribution in this country has been handled very capably by American Telasco Ltd.

Before the arrival of Jetex to this country, reaction-propulsion models were possible only when powered by big, powerful pulsejet engines like the Dyna-jet, or, at the other end of the power scale, the CO₂ capsule. Jetex fills the gap between these two extremes by providing a suitable means of power for models of

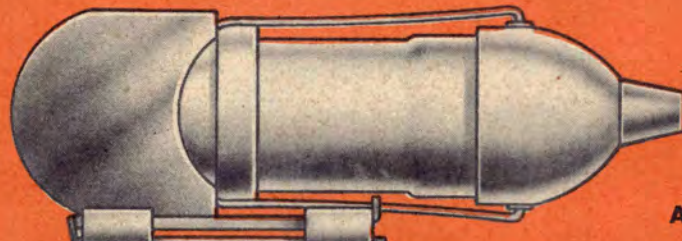
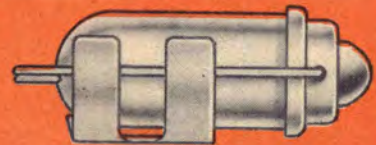
the more popular sizes of free flight and flying scale models of jet aircraft.

For use in the latter type model, Jetex has no equal. It is true that recent experiments with ducted fans show great promise but the Jetex engine is far simpler to install, maintain and perhaps most important, it has little equal for cleanliness and safety in operation.

Speaking of safety, although the Jetex engine may at first glance be likened to the Fourth of July skyrocket, any similarity is purely coincidental. Whereas the skyrocket takes off spouting fire and shooting sparks, no fire spouts out of the Jetex engine and only the faintest trace of smoke is visible when the solid-fuel pellet is burning and the model is under-way.

To further disprove any kinship to the skyrocket, Jetex engines and fuel are sold in many localities where the sale or use of fireworks is strictly forbidden.

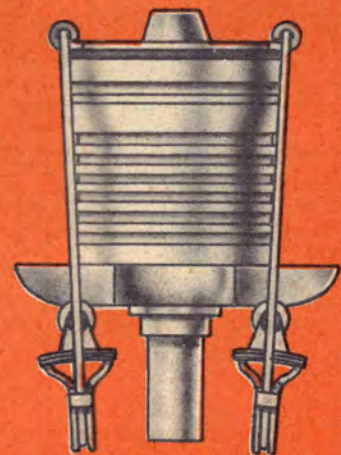
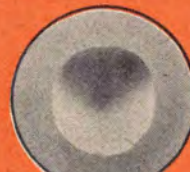
Since Jetex provides a solution to propulsion problems which cannot be met with the more conventional reciprocating



ACTUAL SIZE



FUEL



engine, it is perhaps of little consequence to compare the two. However, to be objective, let's examine all facets of Jetex.

As far as performance is concerned, the Jetex engine was not designed to compete with a good glow plug or diesel engine on a power-to-weight basis. The Scorpion 600, however, with a static thrust of between 5 and 6 ounces for a loaded weight of 2 ounces does not compare too unfavorably with a Half-A piston engine and propeller of similar weight.

The initial cost of the smaller Jetex units is less than for any other type, but the fuel expense runs a little higher. This added expense may well be offset by the money saved on propellers.

Jetex engines, if maintained properly can conceivably last a life-time. While they require considerably more time to fuel up, once this somewhat tedious chore is completed starting is instantaneous.

The greatest advantage of these reaction engines over the reciprocating type is their ability to deliver thrust that is completely torqueless.

No longer in production are the Jetex 100, 200 and 350 models with their complex multiple-coil springs. These springs had to be released one at a time by means of a special tool and a lot of "muscle."

In place of the 100 and 200, there is the Jetmaster 150 which embodies a single U-shaped spring-steel wire clip featuring a roller and leaf-spring which is both simple and efficient in operation. Replacing the 350 is the Scorpion 600. This is the most powerful Jetex engine yet produced; efficient in design, it is both lighter and shorter than the 350 that it replaced. Two spring clips similar to the type used on the Jetmaster have proven adequate for the Scorpion.

The smallest size Jetex, the Atom 35, and the most widely used model of them all, the 50B, use a simple wire clip.

The function of the clip on all models is twofold. Every Jetex engine has an end-cap with a jet hole in its center. The gas generated by the burning of the fuel pellet emerges, at great pressure, through this jet hole. The wire clip retains the end-cap under tension during normal operation. However, should the jet hole become clogged—a very remote possibility—the spring clip under excessive pressure allows the end-cap to act as a safety valve and lift away from the main casing. The internal pressure thus leaks out safely.

With the recent design developments have come improved fuel. A slightly faster burning compound, giving greater power, has been developed. Known as "Red Spot," this fuel can be distinguished by its red color as opposed to the yellow of the standard pellets.

The Augmenter tube, the latest development, when used properly with the Jetmaster 150 increases thrust approximately 25 percent. This gain is not quite

(Continued on page 86)

Specifications	#35	#50B	#150	#600
Engine Weight	.15 oz.	.2 oz.	.73 oz.	1.6 oz.
Fuel Weight	.1 oz.	.2 oz.	.27 oz.	.4 oz.
Total Weight	.25 oz.	.4 oz.	1.00 oz.	2.0 oz.
Thrust (av.)	.4 oz.	.6 oz.	1.75 oz.	5.5 oz.
Thrust w/Tube	.5 oz.	.75 oz.	2.25 oz.	7.0 oz.
Duration	10 sec.	12 sec.	14 sec.	10 sec.
Exhaust Speed	1200 f/s	1300 f/s	1400 f/s	1600 f/s
Overall length	1 5/8"	1 7/8"	3 1/2"	2 1/4"
Max. Dia.	5/8"	1 1/16"	1"	1 1/4"
Model (span)	14"	20"	36"	48"
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192 pages of material slanted toward the hobbyist interested only in the practical aspects of radio control. Very little theory appears in the book. The book is intended for those who want to operate radio controlled planes, boats, autos, etc., and who wish to do so with a minimum amount of theory.

\$2.25 each

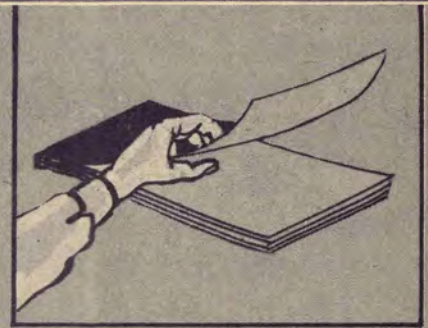


HOBBY HELPERS

770 HUNTS POINT AVENUE
NEW YORK 59, N. Y.

HOBBIES'

"Rayspan" in pad form offered by Aristo-Craft Miniatures (184 Penna. Ave., Newark, N. J.) as new service to modelers. Pads speed handling, insure fresh, unwrinkled sheet. Comes in white, red, green, blue and yellow; sheets are $19\frac{1}{2} \times 24\frac{1}{2}$ "; price, 10c per sheet. "Rayspan" is first in new series of model airplane covering tissues to be marketed by Aristo-Craft.



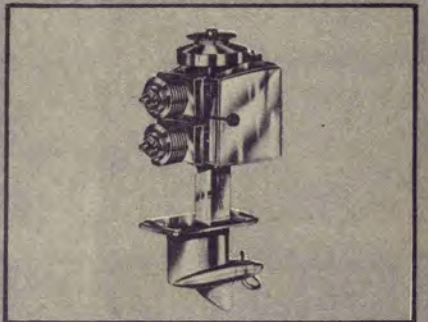
"Commercial Radio Control Equipment" is Collection #3 by Hobby Helpers (770 Hunts Point Ave., New York 59, N. Y.) of outstanding articles from ATH. This 50c 24-page booklet has reports on various R/C sets including Telecommander, Babcock, Citizen-Ship, E. D. Aristrol, Super Aerotrol, Control Master, Philmore, Dynatrol, Deltron, and Essco. Plus special articles.



"FR" Home Developing and Printing Kit is neat \$8.95 deal that contains everything you need to develop and print your own photos. Roll film tank takes 35-mm to #116 film; you even get safe light. For details ask for "Take Pictures Today—Have Prints Tonight" booklet available from the FR Corp., 951 Brook Ave., New York 51, N. Y. Lavishly illustrated, 2-color, 8-pages . . . free.



Sea Fury Inboard Twin, exciting new powerplant by K&B Allyn, comes in two sizes: .12 and .15 cubic inch (total) displacement. Standard "12" is \$14.95; Racing "15," \$16.95. Twin cylinder, alternate firing. For inboard vertical mounting in powered model boats. K&B Allyn has Fury Lube for use in lower end of S.F. and other engines employing gears to provide positive lubrication.



Contra-Rotating Gear Boxes are specialty of Furlong Model Airplane Products Co. (Furlong, Bucks County, Pa.) By using various drive hubs the coaxial conversion unit can be paired with these powerplants: K&B .19-.35; Fox .19-.35; Cameron .19; O&R .23-.32; and McCoy .19-.35. High quality unit comes with factory guarantee. Price for Cameron .19 unit, \$17.95, is representative of series.



SHOWCASE

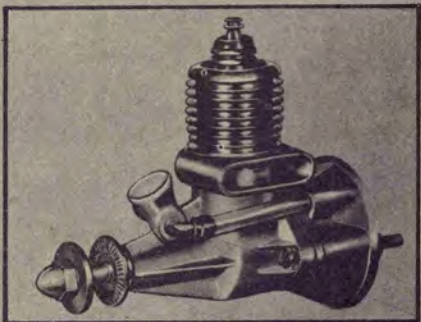
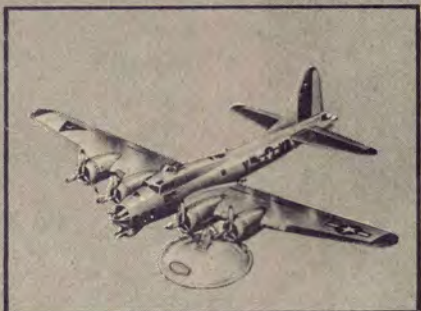
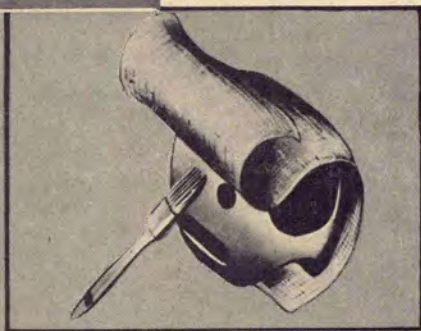
Strong, armor-like finish for wood surfaces can be obtained with fiberglass and fiberglass resin. Berkeley Model Supplies (West Hempstead, N. Y.) now offering "Fibreglas" covering cloth in square yard pieces, .0017" thick, weighing 1.16 oz. for \$1.25. BMS' "Fyb-Res," 8 oz. of resin and hardener, sells for \$1.95. Finished material drills, sands, and polishes. May be color doped.

"Multi-Pak" by Ectron Products Co. saves R/C fans hook-up headaches. This aluminum unit holds 6 pencils and two 22 volt batteries—or it can be quickly converted to three 22's and 4 pencils. Insulated composition board top; \$2.25. This battery box is representative of many new accessories that have appeared to make life easier for the radio control enthusiast.

Answer to many a fan's prayer is B17-G World War II Boeing Bomber just released by Lindberg Products Inc. (Skokie, Ill.) Has span of 19 1/4", length of 14 1/4"; just right size for mantle or desk. Highly detailed, amazingly accurate, this plastic kit sells for \$2.49. Other World War II Lindberg plastic scale models include Stuka JU-87B (out next month), Spitfire, F6F, Zero, P-47 and F4U-5N

Spitfire Products Company has developed this .049 cu. in. displacement engine to meet "the requirements of the advanced modeler who wants a small, lightweight .049." Side port exhaust stack is exclusive feature. Sells for \$4.95. Carries 90-day guarantee. Comes with propeller, glow plug, clip and wrench. Spitfires are made on the West Coast and have been well known for years.

A single coat that produces a waterproof finish unaffected by either fresh or salt water is sales story behind Pactra Chemical Company's new Sea Gloss marine paints for modelers. Special package contains 25 cc. bottles of marine white, bottom bronze, mahogany stain-and-sealer, and spar varnish, plus a smaller jar of cabin blue—\$1. Stain-and-sealer combines two operations.



AIR TRAILS HOBBIES FOR YOUNG MEN FULL SIZE PLANS

GROUP No. 955

50¢

"NAUTILUS" scale model submarine for surface operation by radio control. Designed by Frank Lashet and Cal Smith. 56" overall length; 11" high; 4 1/4" beam. For electric power.

"TAN-GIRO" by Roy L. Clough, Jr. Easily-made control line autogiro with twin rotor diameters of 28", overall length of 36". Takes .14 to .19 power plants.

"LITTLE NORDIK" in HALF-SIZE plan form (with full size wing rib pattern). By George Perryman, international glider authority. This towline glider has span of 51 1/2"; overall length of 37 1/2".

GROUP No. 955A

35¢

"THE REAMER" is Half-A engine size team racer for club contests and beginners' speed and team events. Designed for .049 power. Spans 16"; length is 14 1/2". By Tommy Baker, USAF and USA national record holder.

"SPEED KING" by Italy's Prati Amato is international F.A.I. record holding U-control speed model. Spans 11"; has overall length of 13". Used Super Tigre G.20 engine.

"JET-JOE" is Jetex powered racing car for tether or free running operation. Extremely simple to make; lots of fun to race. 9 1/2" long; 8" tread; 2 3/4" high.

PLANS FOR R/C ENTHUSIASTS

GROUP 855 — RADIO

CONTROLLED NAVY

LANDING-CRAFT, by Musciano. Scale model LST boat; 30" length; 8 1/2" beam; 11" height.

GROUP 755 — ELIMINATOR

James V. Reed's L-19 scale-like R/C model plane. Spans 6"; overall length 42".

GROUP 655 — "PSEUDO-SUB"

by Cap'n Frank Van Buren. A working R/C sub model—water line version. 60" long; 18 1/2" overall height; 6" beam. "ROLL-O" is Vincent Bonnema's R/C contest winner. Spans 5"; length 39".

GROUP 355 — DIXIE

side-wheeler paddle boat, perfect for R/C by Cap'n Frank Van Buren. Length 23 1/2"; beam at paddles 17"; height 12 1/2".

GROUP 255 — MINI-MISILE

by Stephen L. Snyder is 40" span F-51-like semi-scale pint sized R/C plane.

GROUP 155 — PIPER CUB

J-3 flying scale R/C model plane by Charles Hollinger. Spans 70"; overall length 44". One of the finest R/C jobs ever flown.

GROUP 55 — STATEN

ISLAND FERRY boat model by Walter A. Musciano. Perfect for R/C. Overall length 29 1/2"; 7 1/4" beam; 8 1/2" overall height.

GROUP 55B — "LAST OF THE MONOCOUPES"

by S. Calhoun Smith. R/C flying scale model. Spans 58"; overall length 37 1/4".

GROUP 754A — OVER AND UNDER

Harold de-

Bolt's wing stunt R/C plane. Spans 65 1/2"; 45" fuselage.

GROUP R101 — MAC'S

ROBOT by Francis McElwer. R/C free flight model. Spans 60". BUILD YOURSELF A BEEP BOX; full size parts shown, break-away drawings, hook-ups, etc. BUILD YOUR OWN RECEIVER - TRANSMITTER

— Novice Class LICENSE FREE 27.255. Break-away drawings, schematics, photos — Giant size chassis drawings.

GROUP 454A — "WAG"

Dr. Walter A. Good's R/C high-wing monoplane. Spans 5"; 43" overall fuselage length.

GROUP 654A — OBBE

sea-sled type cabin cruiser. Especially good for R/C. Length 18 1/2"; beam 7"; height 5 1/2". GOOD'S XTAL XMTR is 27.55 tone transmitter by Dr. Walter A. Good for use with his non-selective audio receiver. Plans give full size chassis pattern, etc.

GROUP ATA 542 — "LITTLE FREAK" No. 27

Dale Root's remarkable R/C plane. Spans 44"; 30" fuselage.

GROUP 354 — "HIGH-Q"

— Jack Port's National Championship R/C plane. Spans 54"; 40" fuselage.

GROUP 953 — SALTY DOG

CABINETTE R/C controlled cabin cruiser by Frank Ehling. Overall length 27 1/2"; beam and overall height each 8 1/2".

50¢ for each complete group above

GROUP 554A—WALT GOOD'S Non-Selective 3-tube 27 mc. R/C audio receiver. Full size patterns and helpful photos; plus circuits. MAC II Hi-Power 5-Watt Transmitter by Howard McEntee. Full size chassis drawings and all data for duplicating Mac's famous top-power xmtr. MINI-MAC Hard-Tuber by Howard McEntee. Simplest thing in non-gas type receivers by the old master himself.

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JOB CAREER SCHOOL GUIDE

NEW COURSES. The Technical Institute of Fenn College (Cleveland, O.) now has a course in industrial styling for engineers, commercial artists and the like. All about how to make vacuum cleaners, pen-holders, refrigerators and what not more enticing to the consumer—design-wise. . . . Beginning this year, Illinois Institute of Technology offers a course in nuclear physics. Also now being taught there: highway engineering. . . . University of Rochester has a new course in Medical Illustration. Takes three years. You must have a high school diploma; training in art, biology, physics, geology. Tuition \$180 per year.

The month of September sees the inauguration of a two-year course in Photographic Technology at the Long Island Agricultural and Technical Institute (Farmingdale, N. Y.). Set up in cooperation with the National Association of Photographic Manufacturers, this course will train technicians to install, service, test, inspect and maintain all kinds of photographic equipment, and to manage and operate photographic service organizations. To enroll, you must be at least 16 and a high school grad. Tuition free to State residents; moderate fee for outsiders.

BETWEEN THE DOTS. . . . Oberlin College (Ohio) students earn more than

Air Trails **HOBBIES** For Young Men

\$630,000 working their way through. Among the part-time occupations: radio announcing and free-lance photography. . . . It can be done! Almost three quarters (73½%) of the 1954 graduating class of Broad Ripple High School in Indianapolis (Ind.) went on to college, with 70 of the seniors receiving scholarships amounting to more than \$75,000. . . . In the 11 years of its operation, the G.I. Bill of Rights has given this country 145,000 engineers and 744,000 scientists, among other callings. Almost eight million have received some sort of schooling or training under its provisions. Estimates say that by 1970 the extra income taxes being paid on earnings made possible by such training will have paid off the cost of the program—\$15 billion.

Total enrollment at technical institutes for the 1954-55 school year increased 12% over 1953-54 (56,000 as against 50,000)—and the percentage of full-time pupils jumped almost 35%. (These figures from a survey by Don C. Metz, director of Technical Institute of University of Dayton, prepared for Technical Institute Division of American Society for Engineering Education.) But industry says "not enough"—this year there were five jobs waiting for each graduate. . . . And this year the total of college engineering grads of all kinds was a mere 21,569 (from colleges and universities accredited by Engineers' Council for Professional Development). There were three to five calls for every such technically trained diploma holder. Highest number in any one branch: 5,250—mechanical engineering. How many new aeronautical engineers? Answer: 730. . . .

FROM THE PREXY'S DESK. Meaning the President (and Chairman) of Curtiss-Wright Corp.—Roy T. Hurley, who has this to say to you readers of ATH: "Aviation, already America's biggest industry, probably will not realize its full potential in our lifetimes. Constant research and development, to meet steadily increasing commercial and military requirements, tomorrow will make obsolete the most advanced aircraft ideas of today. No other field offers such a challenge, nor comparable security, to engineers and a wide range of skilled specialists. Young men who are contemplating their future should seriously con-



"Empty! Student Dobbs is playing hockey again."

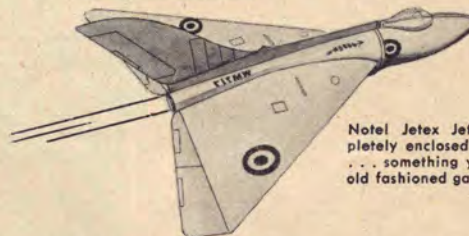
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Ideal for average size scale models of jet fighters—jet exhaust velocity at blasting, 1400 feet per second. With fuel and wick . . . \$4.95. Extra fuel \$1.25 for 10 pellets and wick.



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Notel Jetex Jet Engine is completely enclosed for scale realism . . . something you can't do with old fashioned gas power.

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**READ THE EXCITING NEWS OF JETEX
POWER — ON PAGE 76 — THIS ISSUE**



JETEX #35 "ATOM"
Gives spectacular performance on planes up to 14" wing span. With fuel and wick . . . \$1.75. Extra fuel 65c for 8 pellets and wick.



JETEX #50B "STANDARD"
For planes up to 20" wing span—with fuel and wick . . . \$1.95. Extra fuel 65c for 6 pellets and wick—\$1.25 for 15 pellets and wick.



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sider the opportunities offered in a career with our industry."

NEW SCHOLARSHIPS. If you're a Civil Air Patrol Cadet, now is the time to get busy about applying for that new full four-year scholarship in aeronautical engineering at Massachusetts Institute of Technology which has been established by Ziff-Davis Publishing Co. The first scholarship begins with the fall term of 1956, and the award will be an annual one, to top man selected on a competitive basis among CAP cadets. Several other companies also have tentatively scheduled four-year aeronautical scholarships to be handled through CAP. See your Squadron Commander for full details.

One of the biggest breaks in scholarships for high school students to come along in years is the new Proctor & Gamble aid-to-education program which consists of 200 four-year scholarships (open to both boys and girls) at 25 to 30 colleges and universities. (There will also be 40 scholarships exclusively for women's colleges.) The awards mean full tuition for four years and an annual allowance for books, fees and supplies. No restrictions as to the kind of course you take, and no liens on your future as to type and place of employment after graduation. Schools you may attend are both technical and liberal arts. In all cases, the schools themselves will administer the scholarships, selecting all recipients.

So—it's up to you to write the Registrar of the institution you're interested in and ask for requirements and procedure—about scholarships for the 1956-57 year, for which you should start rolling your hoop now. Here are the general col-

leges participating in the Proctor & Gamble Scholarship Plan:

Amherst College, Amherst, Mass. Brown U., Providence, R. I. Calif. Institute of Technology, Pasadena, Calif. Carnegie Institute of Technology, Pittsburgh, Pa. Case Institute of Technology, Cleveland, O. U. of Chicago, Chicago, Ill. Colgate U., Hamilton, N. Y. Columbia U., New York, N. Y. Cornell U., Ithaca, N. Y. Dartmouth College, Hanover, N. H. Davidson College, Davidson, N. C. Dennison U., Granville, O. DePauw U., Greencastle, Ind. Duke U., Durham, N. C. Harvard U., Cambridge, Mass. Illinois Institute of Technology, Chicago, Ill. Kenyon College, Gambier, O. Lehigh U., Bethlehem, Pa. Mass. Institute of Technology, Cambridge, Mass. Northwestern U., Evanston, Ill. Oberlin College, Oberlin, O. Ohio Wesleyan U., Delaware, O. U. of Pa., Philadelphia, Pa. U. of Pittsburgh, Pittsburgh, Pa. Princeton U., Princeton, N. J. Rensselaer Polytechnic Institute, Troy, N. Y. U. of Southern Calif., Los Angeles, Calif. Stanford U., Stanford, Calif. Syracuse U., Syracuse, N. Y. Tulane U., New Orleans, La. Vanderbilt U., Nashville, Tenn. Washington U., St. Louis, Mo. Williams College, Williamstown, Mass. Xavier U., Cincinnati, O. Yale U., New Haven, Conn.

Note: abbreviations above were made to save space. In addressing the schools, please don't imitate us to the extent of sounding like a Damon Runyon type!

CAREERS IN CARS. Not as a race car driver, but in the retail automobile business—sales, service or management. That business is on the threshold of one of the biggest commercial booms for an established industry in history. Today there are 50 million cars and trucks rolling our highways. Within 10 years, say the experts, there will be 60 million—due to increasing population and the trend toward living in the suburbs. And all those cars and trucks will need skilled mechanics, they must be sold by trained salesmen, and require dealers and managers. Lots more personnel needed in all categories.

This expanding business will offer unusual opportunities for advancement because of the many chances for training available—free training schools maintained by the auto manufacturers and allied branches of the industry, training programs sponsored by the dealers, special automotive courses at technical institutes, and the like. We plan to tell you about such courses from time to time. Just now, to help you obtain an overall picture of this field and have a lot of your questions answered, we recommend a free booklet available from General Motors Corp., Detroit 2, Mich., entitled "A Key to Careers in the Retail Automotive Business."

Realism "Shots"

(Continued from page 32)

Our young photographer has now put everything together and come up with what he was trying for. Note he has moved the camera just a few inches making one wing stand out against the black of the hangar door and the other against the sky.

Also now included is part of another plane at the right hand-edge, which adds a little realism. The focus is sharp on the model and slightly unsharp on the background. This helps make the plane stand out, keeping it the center of interest.

Make lots of exposures, think about what you are doing, see (really see) what is in front of the camera, and you should have some fine results too.

Readers are invited to tell us about their model photo problems. We'll do everything possible to help them take better model "shots."



BIG NEWS FOR ALL MODELERS

Starting with the November issue this magazine sports a new name: "YOUNG MEN" with a descriptive sub-title of "HOBBIES • AVIATION • CAREERS". Format and contents will be just as you find them now in each issue with the exception that the radio control and model boating sections will be further expanded!!! Big cash awards for plane, car and boat design contests in each issue continue—also those generous payments for "Hobbies-In-Action" and "Most Realistic Models" photo competitions. Oh, lot's of pleasant surprises in store for all modelers, too!

SUBSCRIBE NOW—YOU SAVE MONEY and you have your copy each month delivered to your home! 12 copies bought on the newsstand cost you \$4.20. BUT you can subscribe today at ONLY \$3.50 (in U.S.A. and Canada). Keep up with the latest in model planes, cars, boats as well as radio control, aviation events, and scholarship opportunities and job opportunities in engineering!

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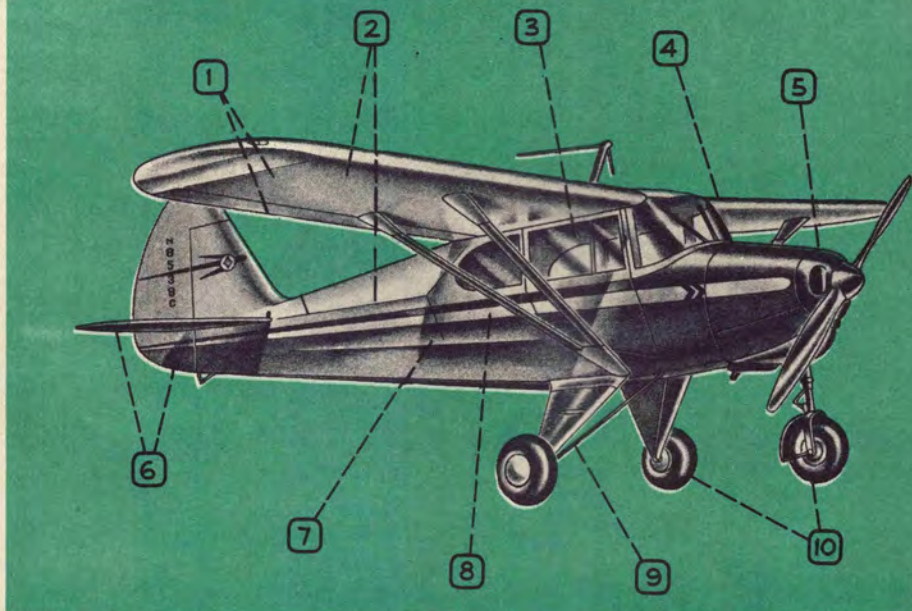
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ATH-9-55

(U.S. and Canada only.)

Berkeley "Tri-Pacer"

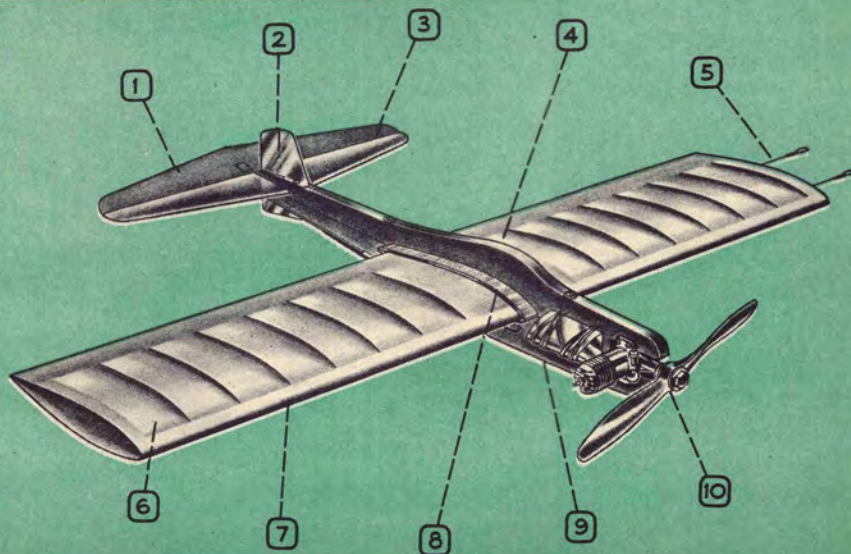


■ For radio control free flight or control line operation, Berkeley Models' 44" span scale Piper is $1\frac{1}{2}$ " to 1' scale. Note-worthy points: 1) all balsa spars, strips, blocks cut to dimension; 2) all ribs, formers die-cut of balsa and plywood; 3) die-cut plastic windows and windshield; 4) Silkspan covering material; 5) .065-.099 engines for R/C; .035-.075 for free flight; .075-.15 for control line flying; 6) die-cut balsa tail group; 7) data for radio installation; 8) scale decal insignia, trim, including dashboard; 9) former steel wire landing gear; 10) rubber wheels included.

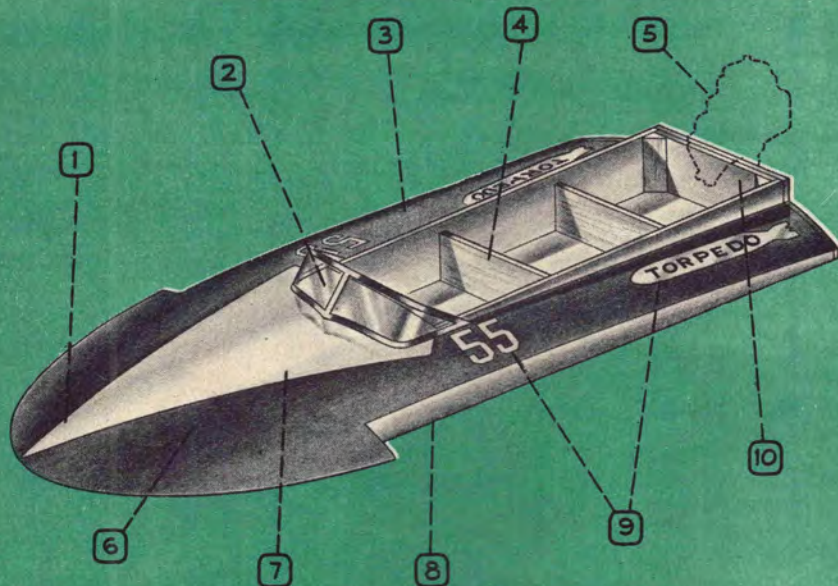


■ A completely covered combat or trainer plane model ready for doping is Darwin Model Aircraft's "Special." Spans $7\frac{1}{2}$ "; has 24" fuselage. Note these features: 1) finished balsa elevator-stabilizer unit; 2) formed metal fin and sub-fin bolted in place; 3) finished wire and tube hinges; 4) complete control unit installed; 5) stranded lead-out cables with formed loops; 6) completely built balsa-frame, symmetrical-section wing; 7) Silkspan covering applied and water sprayed, ready for doping; 8) pine wing saddles in place; 9) finished profile hard balsa fuselage; 10) .19 to .35 cu. in. displ. engines recommended.

Darwin "Special"



Scientific "Torpedo"

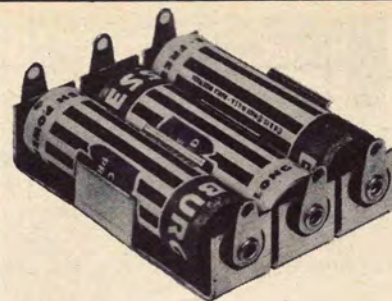
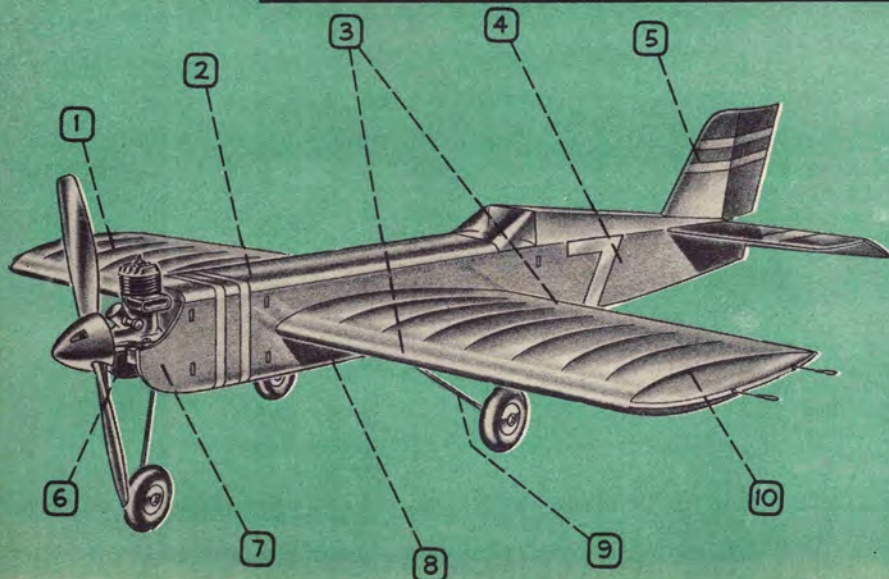


■ If it's speed you're seeking here's one speedboat that is sure to fulfill your expectations. Length is 20"; beam is 8". Kit by Scientific Model Airplane Co. Special points of interest to be noted are: 1) nose ballasted for trim; 2) printed plastic wind-shield; 3) die-cut mahogany veneer top deck; 4) die-cut balsa cockpit sides; 5) model glow plug outboard engine recommended power; 6) die-cut balsa formers; 7) decal color trim; 8) die-cut mahogany veneer bottom, printed former locations; 9) decal insignia and numerals; 10) double die-cut plywood transom.

■ This tricycle-gear control line stunt and combat craft is prefabbed by P.D.Q. Products Co. Wingspan is 42"; wing area, 380 sq. in.; overall length 27"; complete weight from 20 to 22 oz. Points of interest: 1) Silkspar covering material supplied; 2) die-cut, notched plywood formers; 3) shaped, notched, leading and trailing edges, die-cut joiners; 4) die-cut balsa fuselage sides; 5) die-cut balsa tail group parts; 6) class B or C engines recommended for power; 7) hardwood engine bearers; 8) die-cut balsa fuselage doublers; 9) formed steel wire struts for tricycle landing gear; 10) die-cut balsa wing ribs.



P.D.Q. "Lion Tamer"



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Complete ready to dope and fly.

For engines .19 to .36

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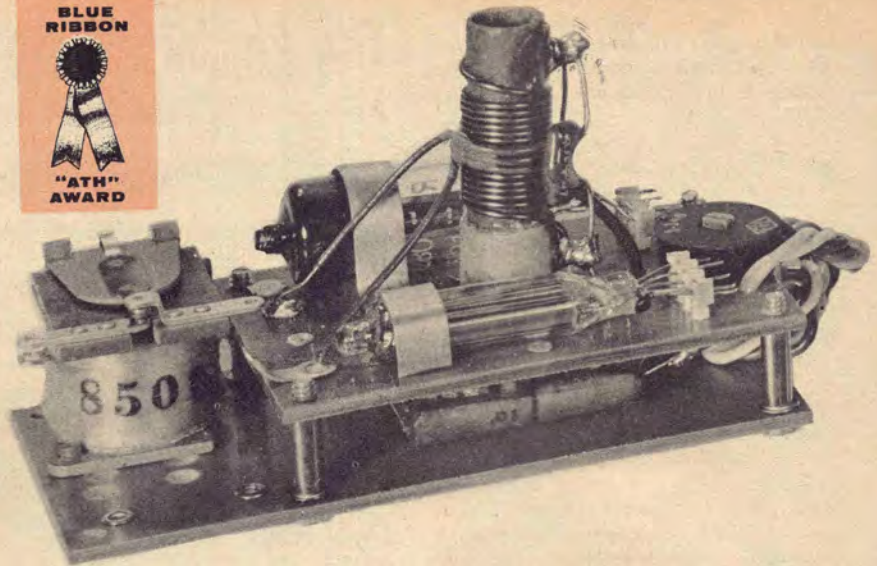
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RADIO CONTROL REVIEW:

Cascade-Quad Gas Tuber by ESSCO

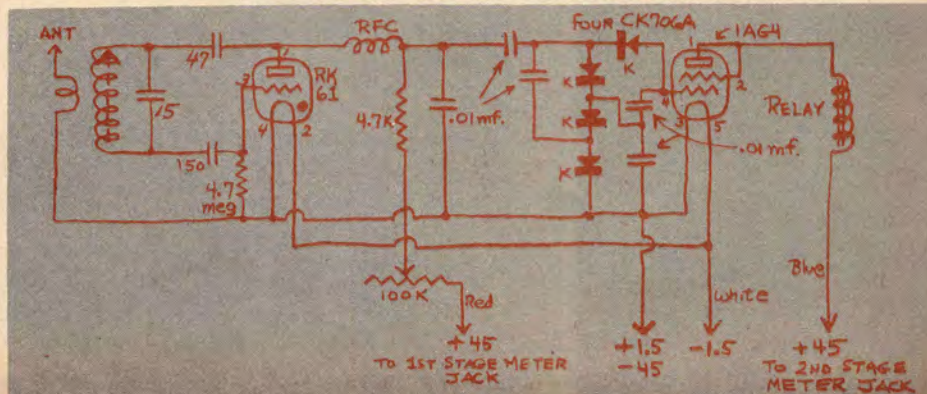
■ The name of this receiver comes from the four diodes in a voltage-quadrupling circuit. Basically it is the same as the two-tuber that ESSCO has sold for some time, but the addition of the four diodes offers new advantages. Greatest gain is in lower idling current for the RK61, which, of course, leads to longer gas tube life. Even with the present "long-life" RK-61's, this lower idling current is an important feature.

This voltage-quadrupling circuit also means that there is no longer any reason to use a gas tube in the second stage of the receiver—though you can if you wish. A hard tube in this position, such as the MPC-1 or 1AG4, will idle at zero current, and the on-signal current can be set at any value within the capabilities of the tube, by proper selection of the relay coil resistance. Also, because the second tube idles at zero, and can be made to rise to 4 ma. if desired, you can use low cost relays to save money.

As there is such a wide selection of usable relays, the new receivers using the Cascade-Quad circuit are made up with

an extension base, so that any desired relay may be mounted. The receiver is built in "sandwich" style, with most of the small components protected between two sheets of 1/16" thick linen bakelite, separated by four 3/8" corner spacers. The upper plate holds on top the two tubes and their flea clip mountings, the tuning inductance and the detector adjusting variable resistor. The underside of this same plate carries all of the small parts including the four diodes. This plate is 2 1/2 x 1 3/4" in size and constitutes a complete receiver—less relay—with all needed controls. The lower plate is 3 1/2 x 1 3/4", the extra inch being allowed for relay mounting. There is sufficient room for fairly large relays, such as the Sigma 4F, though this one hangs over a bit. Smaller types like the Sigma 26F, Price, Neomatic, etc. fit on nicely. Since the bottom plate has no critical circuit elements on it, a piece of sponge rubber may be cemented to the underside, for shock-mounting the receiver.

The two tubes are held firm with a metal clamp plus the flea clips. To assure



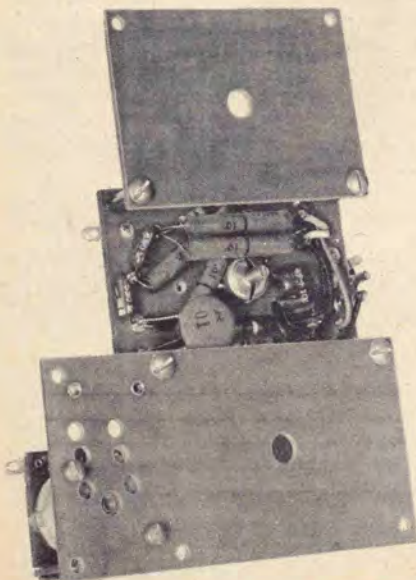
top performance with lightest weight and utmost stability, sub-miniature silver mica capacitors are used in the R.F. circuits. The receiver comes adjusted for the RK61 that is supplied with it, of course.

ESSCO offers the receiver in quite a variety of forms; there is a basic parts kit, with drilled base, wound input coil, etc., for those who have quite a stock of small parts. Then there is Model A parts kit—a complete set of parts; this is also available ready to use. Model B is the complete parts kit, with tubes and the Price relay; this one may also be had wired, tested and ready to go. Lastly, ESSCO offers a conversion kit, which includes several condensers and resistors, and four diodes, with which to change any existing two-tuber which uses an RK61 in the first stage to the new Quad setup. It should be noted that when making a conversion of an existing receiver, the variable resistor in the plate circuit of the first tube (usually a 10,000-25,000 ohm unit) should be replaced with one of at least 100,000 ohms in order to cut the plate current of the gas tube down to the desired operating range.

The instruction sheet that comes with the conversion kit shows where holes should be drilled in former ESSCO two-tubers, and where the new parts go, in four illustrated steps.

Specifications: ESSCO Cascade-Quad receiver, with RK61 detector and 1AG4 relay tube. Overall size (with Sigma 4F relay)—1½" x 2" high x 4" long. Weight, with tubes and same relay—4¼ oz. Weight with lightest standard relay (Neomatic)—2½ oz. Tuning control—coil slug. Relay tube idling current set to zero with variable resistor.

Battery Requirements: A—1½ V at 90 ma (when 1AG4 is used as relay tube). RK61 idles at .25-.35 ma, drops to around .05 ma with signal; 1AG4 (used with 8,000 ohm relay) idles at zero current, rising to 2-2.5 ma.—depending upon particular RK61 in use.



Rear of receiver with both types of baseboards that are supplied with the set.

The Readers Write

Let's hear from you! Address all letters to Air Trails HOBBIES For Young Men, 304 East 45th Street, New York 17, N. Y.

To Take Good Photos . . . I need your help. I want to know how I can take good clear photos of the models I build. Most of the time, when I take pictures, I stand about six feet away from object with a good bright sun in back of me. I sight up, pose and then snap. I use a small Brownie camera with 620 film. Sometimes the pictures come out, and sometimes they don't. I don't want to waste any more money than I have to on films. Please, could you give me some good directions on photographing my models? I'd be very grateful if you could!

Yours for better pictures.

Jon Carter, Tucson, Ariz.

● For you, Jon, and thousands of other model photographers we start a new series of helpful how-to-photograph articles in this issue. See pg. 32.

Great Minds, Same Idea! . . . Your 1953/54 Air Progress was very good. I especially liked the article "Secrets of Japan's Airpower." I would like to see in the next issue (1955/56) something about the American planes in the Pacific Theater.

Alan Dolyns, Zephyr, Texas

● American aircraft in World War II will come in for some extensive coverage in the forthcoming Air Progress (on sale August 23rd).

Another Race Car Man! . . . I have just read the article on "Model Car News" in the last issue. This is my first time to read this column because I was not interested in anything but U-control planes up until now. After reading the article I want to try my luck on model race cars but there are no hobby stores around here that carry race cars and I would like to know where I can get catalogs or handbooks on them.

Can you help me?

Bobby Cobb, Anniston, Ala.

● Write to American Miniature Racing Car Association, c/o Carl Noward, 1384 Berdan Ave., Toledo 12, Ohio. Also contact American Hobby Center, 156 West 25th St., New York City 1, and Polk's Model Craft Hobbies, 314 5th Ave., New York City; Franny's, 513 Vesta Pl., Reading, Pa.

Enamel Finish . . . Would I get a good job on my airplane models if I use house paint enamel with thinner? I have used enamel on wood models and it comes out pretty good.

Philip Desti, Brooklyn, N. Y.

● If you are referring to a solid model, there is no reason to doubt that a good finish can be obtained with enamel. Enamel paint is much heavier than dope or lacquer and therefore is not usually recommended for flying models, even if they are of solid or sheet covered construction. It should never be used on paper or fabric-covered models.

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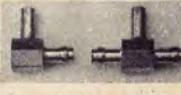
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"Jet-Joe"

(Continued from page 49)

an area large enough. While you can time it for speed in a straight line, this gets pretty tricky and is subject to considerable error; it is simpler to see how far you can make the car go or to race several simultaneously. It was found that 200 ft. were covered before the jet fizzed out, with considerable roll after this. Such operation puts a premium on adjustment, of course—the fellows who can set his wheels precisely will travel farthest, as he'll be going in a straight line.

Trial runs showed that better speed could be had with 1" diameter K & B streamline wheels (which have less wind resistance and less area on the ground) than the balloon type shown. If you operate on a rough surface, larger wheels might be an advantage; 1" or 1½" wheels are fine for fairly smooth areas like asphalt parking lots.

One final hint for small-area running; make the car with a length of about 6¼" rather than scaling it up to the 9½" length of the original. It will then be perfect for real speed with a Jetex 35 engine.

Torqueless Jetex

(Continued from page 77)

as great with the Scorpion 600 or with the smaller engines. However, it does make it possible to fully enclose the engine within the fuselage of scale models. In fact, building the fuselage directly around the Augmenter tube has proven very popular.

These tubes are made of thin-gauge aluminum alloy and since the thrust is continuous, tube length is not critical, as it would be with a pulse-jet, and therefore it may be shortened or lengthened within moderate limitations, to conform to a particular model's requirements.

Tailpipes of 1" dia. and up to 13" lengths are supplied for use with the larger engines. ⅝" dia. 4" to 6" length tubes are available for the smaller engines.

Getting back to the engine itself, all Jetex engines as well as any reaction type jet propulsion device is based on a very simple fundamental principle of physics known as "Newton's First Law of Motion"—to every force there is an equal and opposite reaction. In the Jetex engine the primary force, called thrust, is created by the burning of the fuel pellet. The large volume of gas generated is allowed to escape through the tiny jet opening or nozzle in the end cap. At the nozzle, the gas is under high pressure and escapes at supersonic speed. The reaction force of this high-velocity gas escaping rearward is what drives the Jetex powered model forward.

Although at first glance all Jetex engines may appear the same inside, close inspection shows a number of differences. The Atom 35 employs a cone-shaped washer in the end of the case and the fuel pellet is recessed to fit. This was done to reduce thrust toward the end of the power run to obtain a smoother transition from power to glide.

The 50B uses a flat pellet and a flat washer. The fuel pellet for the Scorpion 600 is concave on its forward face. This cavity enlarges the burning surface thereby increasing thrust.

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BALSA WOOD and its PROPERTIES—First complete book covering the whole balsa wood industry. \$2.00. John Dreisbach, Box 14, Ringtown, Pa.

MODEL SUPPLIES & EQUIPMENT

SMALL POWER STEAM ENGINES, boilers, castings. Catalog 25¢. Anton Bohaboy, 2297 Price, Rahway, New Jersey.

COLLECTORS ITEM—Reversible "23" meteor engine. Glow plug type. Postpaid \$9.50. R. Hetherington, 4434 Eagle Rock Blvd., Los Angeles 41, Calif.

MODEL BUILDER CLUBS

RACE CARS—American Miniature Racing Car Association. For membership information send 10¢ to Carl Noward, 1384 Berdan Avenue, Toledo 12, Ohio.

POWERED BOATING—International Model Power Boat Association. Mrs. Margaret Baxmann, 2791 Garland Avenue, Detroit 14, Michigan. Send 10¢ for membership data.

Hobby Shop Directory

Model Builders! Here's a listing of the nation's leading hobby shops. You'll want to file it away—and when you're in the neighborhood, drop in and browse around. They're expecting you.

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Oddly enough, although great care is exercised in formulating the pellets, no two similarly sized engines burning same-size pellets (even taken from the same box) will have the exact same thrust and duration. It is for this reason that we do not recommend the design of a twin Jetex model where the engines are located at any great distance from each other, say on each wingtip.

Without exception, failure to start is due to carelessness in loading, where the igniter wick is not properly pressed in contact with the pellet or because the pellets have been allowed to get damp.

Although every possible safety precaution has been taken into consideration in the design of these engines, the element of heat should not be regarded too lightly. Even though the exhaust gases are not hot enough to burn anything, the case gets quite hot and should not be handled until you are absolutely sure that sufficient time has elapsed between runs to allow for adequate cooling of the aluminum.

This usually requires from 2 to 5 minutes of time.

Hobby Model World

(Continued from page 74)

indoor prop with .007 wood to meet the rules specs. . . . John Tatone's super beautiful instrument panel on his Nats scale Meyer 145. . . . The screaming of the indoor flyers for 64th sizes of rubber, anyone got any? . . . The slick way the guys do props in R/C by bursting the engines until the distance is covered, the snubbers they use on the front wheels. . . . Webb Hill's four-wheel guaranteed take-off. The good news that his Dethermalizers will be back on the market. . . . And last but certainly not least, the real solid way the contest ran—in spite of all the interference.

Cover is Champ. Big winner, of course, was Hal Cover, the State Champion, who was also the Senior Champion with four first places and two places. Manny Andrade was open champion, Ralph Harmon junior champion, Joan Calkins women's champion, and the Westchester Wings of Los Angeles, the Exchange Club

Champions.

In R/C Dick Austin won the Rudder Control event with 52½ points, closely pressed by Alex Levantine with 50½ points. The Multi event was even closer, Colby Evett posting 1½ more points than Dean Kenney with his 105½ points.

Industry Notes. We have recently installed a Kading Go-Jet in a Torp .15 and have been pleasantly surprised at the results. We were shown samples more than a year ago and find the finished product event better than the samples. We like very much the intake for the fuel on the same side as the needle valve for we no longer have to mount the timer in the exhaust and/or get our fingers burned while adjusting a needle valve. Control seems very good while gas pull is very steady. They come complete with everything required to install them.

We have also just seen that Civvy Kit and is it a kit, so pretty it seems a shame to build the model—good balsa—good fit—and fast to build. P.S. It also flies good—watch for them at the Nats.

—DICK EVERETT

"Multichannel" offers you the best possible R/C flying. The lightweight dependable system works fine in all normal size models making it easy for you to use multi-controls. Only with "Multichannel" do you get controls completely independent in action and safety. "Multichannel" duplicates full scale flight! Approved and used by the best R/C flyers in the country! NEWLY IMPROVED FOR '55!



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"Multichannel" Servos are motor driven low battery drain type with over 12 oz. of torque. Rudder is self-neutralizing and semi-proportional. Elevator is positionable for trimming and is self-centering. Weight each 2½ oz.

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What's Your Hobby?



▶▶▶ "My hobby is building waterline model warships," reports Eugene E. Holmen (above) of Baltimore, Md. "The ships are built entirely of ordinary modeling clay and are all to a scale of 1" equals 80 feet. My present fleet consists of almost 200 modern warships ranging from aircraft carriers and battleships to submarines and patrol boats. It has taken 5 years of spare time work to build this armada."

Ships shown (from top) are "USS Lexington" aircraft carrier, 33,000 tons displacement, 33 knot speed, sunk May 8, 1942 by U. S. Naval forces after being damaged by Jap bombs; German battleship "Bismarck," 45,000 tons, 30 knots sunk May 27, 1941, after a running sea battle with planes and fleet units of the British Navy; "HMS Cossack," British destroyer; "Emile Bertin" French light cruiser; and "USS Atlanta" A.A. cruiser.

▶▶▶ Peter M. Relyea summers in Waterbury, Conn., and in winter takes his 28" "mobile home" to Florida where he and the Mrs. carry on with radio control. Under construction, The Beam.



Tell us about your hobby if it is of special interest to mechanically minded young fellows! Send photographs and details on how you got started to "What's Your Hobby," c/o Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y. We pay \$25 for first photo and \$5 for extra photos used. Entries not used will be returned, but we cannot be responsible for submissions.

Air Trails HOBBIES For Young Men

SEPTEMBER, 1955

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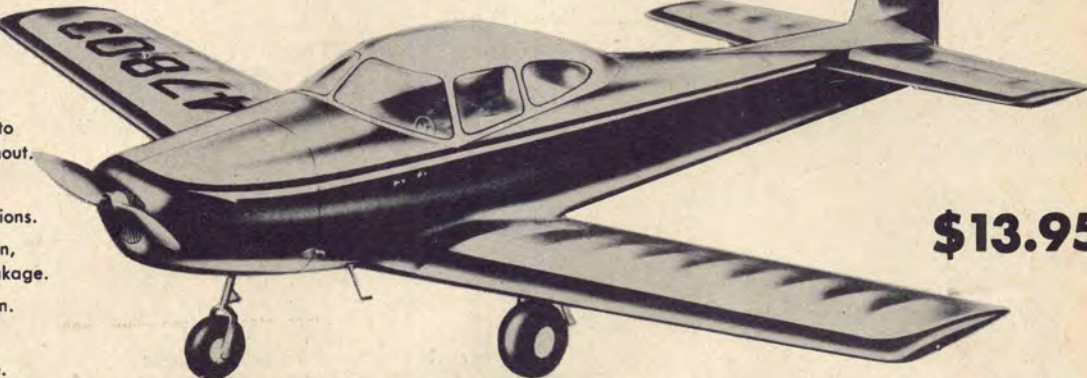
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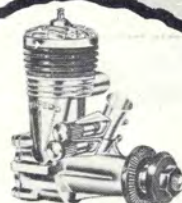
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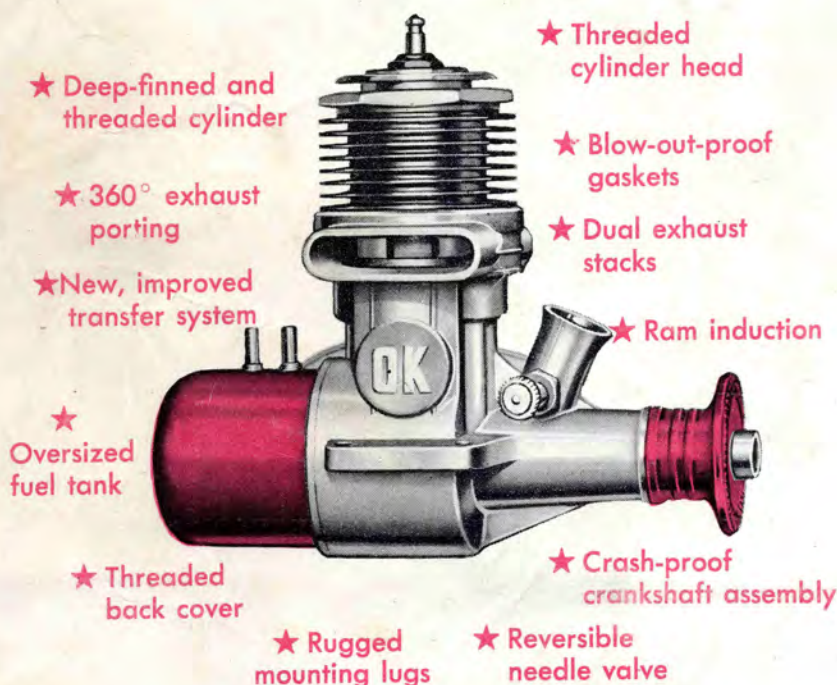
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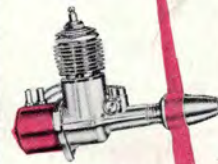
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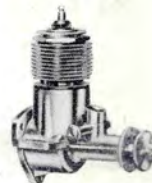
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